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THIS WEEK'S NEWS

PAGE

THAT there was no more rapid route to the Nazification of the architect's art than to preach visual education one day and practise visual censorship the next, was a point made by Mr. Lionel Brett, M.A., A.R.I.B.A., in a paper entitled "Second Thoughts on Planning," read to the R.I.B.A. on Tuesday. 644

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THE DEATHS are announced of Messrs. T. Harold Hughes, F.R.I.B.A., George Drysdale, F.R.I.B.A., and Percy John Waldram, F.R.I.C.S. Obituary notices will be found on page 657

"THAT if Parliament presses ahead too fast with a further programme of legislation governing landed interests, there is a grave danger that her policies may be frustrated by a shortage of persons properly qualified to carry them into execution," was a view expressed by Mr. John A. F. Watson, J.P., in his presidential address to the R.I.C.S., a report of which is given. 658

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"CAIN" (V. C. Abell) writes the second article in the third series on "Price Build-Up To-Day," which deals with granolithic paving and carborundum. 664

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THE REMARKS of Mr. Aneurin Bevan, Minister of Health, and others, made on the occasion of the second reading of the War Damaged Sites Bill, are included in the report on Parliament. 674

NEW DIRECTIVES on economy of softwood are contained in Circular 100/49 issued to Housing Authorities by the Ministry of Health. The Minister does not propose formally to reduce the 1.6 standards allowance per house of 1,000 ft. super; it is to be regarded "as a maximum to be applied only in exceptional cases." The full text and appendices are on page 675

INCENTIVES: A UNITED FRONT

THE end of the two-year initial period of permissive operation of bonus incentives finds the building industry further along the road to achievement than at one time looked probable. It would be idle to deny that resistance to the principle still exists on the part of some employers and men but—setting aside the hard-core of diehards on both sides—this opposition is confined, by and large, to employers whose field of operations makes it difficult to work schemes (*e.g.*, maintenance builders) and to operatives working for firms which either cannot or will not devise fair and satisfactory schemes, and who therefore are looking for an increase in plain time rates. In general, therefore, employers who have adopted bonus systems have found them to speed up output and to reduce costs and many operatives welcome the chance to improve their earnings; the number on both sides is increasing.

This is a fortunate trend to note at a time when a constructive plan has shortly to be laid down to cover the next phase of industrial wage relations. The Government having laid down clearly its policy of freezing wages, it becomes clear that unconditional increases in basic wages are out, and that any improvement in earning power must be linked with building output. Employers must therefore expect increased pressure from the operatives to initiate and operate satisfactory incentives schemes. In our view, they must be prepared to meet all legitimate demands; the alternatives are various but all unpleasant.

The operatives' demands must be legitimate, however, and one which would clearly be unreasonable is a proposal that a national scheme should be immediately operated. However desirable this might be, it is not possible, certainly without more experience. The full and interesting debate held recently by the Central Area No. 1 of the London Master Builders' Association, reported in this issue, makes clear some of the problems with which the employers are faced. The position of the maintenance builder is particularly fraught with difficulties.

To the long-term solution, each side, employers and operatives, in addition to a joint offering, has an individual contribution to make. Employers must:

(1) Accept the principle that if bonusing cannot be applied immediately to all work, that is no reason for seeking to apply it to none;

(2) Agree as a body that existing arrangements must at least be maintained and improved, where shown to be necessary, accepting the fact that the work of improvement must necessarily be a slow, complicated and controversial matter.

(3) Go all out to find a workable scheme of incentives for the jobbing and maintenance builder. (Here profit-sharing provides a likely field for exploration); and

(4) Take every step to improve their knowledge of management and cost control.

The operatives' organisations on their side have much to do. That for the most part their contribution is concerned with the re-education of their members and is likely to be unpopular with the rawer recruits ought not, we believe, to deter them. We see their tasks as:

(1) To conduct an educational campaign of simple economics among their members based on certain primary facts:

(*a*) That the real threat to full employment is not high production but under-production, and that this remains true so long as the tremendous potential demand for building of all kinds exists, whatever the vacillations of this or any future Government; and

(*b*) That the resources of the building industry are not a bottomless pit upon which demands for increased

wages can be made either now or in the future unless related to output.

(2) To revive the truth that there are spiritual incentives as well as monetary ones, chief of which is a pride in work.

(3) To set the example in ceasing to look over the shoulder at the spectres of the past, and to take a more realistic view of the present and, especially, of the future.

(4) To reaffirm in and out of season that unless the principle of an honest day's work for a fair day's pay is accepted by all operatives and not only by a minority, the end is in sight for all.

These tasks must be accepted by both sides and faithfully discharged. In addition, a joint contribution is required. There is a vital need for both employers' and operatives' Federations to work together on this problem of increased production. There has been too much half-heartedness in approaching this question of incentives and a tendency to advance the difficulties in the way instead of allowing the difficulties to argue for themselves. The critical condition of our country makes it vital that there should be no further hanging back, but that both sides should tackle the job together. There is in existence, officially at least, a Joint Production Council. This should be taken from the pigeon-hole, resuscitated, given a strong injection of fresh blood in the form of men from both sides of the industry who appreciate the needs of the situation and are aware of the inevitable national consequences of failure, and set to work. From somewhere must come a strong tincture of those qualities of imagination and humanity which will give the best, indeed the only chance of success.

This problem of securing increased production within a framework of decent conditions is, in our view, so grave that only by a united front can we win through. We need not two sides, but one team.

BUILDING IN THE U.S.A.

AT a time when almost every North-Atlantic liner carries a mission from this country to inquire into one or other aspect of United States industrial economy, it is interesting to have the views of a well-informed American on the state of his own country, particularly, from our point of view, when the subject specifically is building. We therefore welcome a remarkable book which, published in the United States in 1947, has just made its appearance in this country—"American Building: The Forces that Shape It,"* by James Marston Fitch. This book is not essentially an exposition of contemporary American building techniques, though it takes them in its stride; it is a philosophical study of building from the days of the Pilgrim Fathers to recent times, with emphasis on the forces that shaped it; and it falls naturally into two parts: (1) architectural history, and (2) developments, particularly modern scientific and technological developments, in the building field.

Mr. Fitch summarises briefly but vividly architectural developments in America during the past 300-odd years, and one is struck by their general similarity to those of our own country during the same period: there is the early survival, or rather transplantation, of mediæval tradition, the succession of Renaissance and Georgian modes (evolving into the distinctive Colonial style), the subsequent harking back, after the War of Independence, to classic prototypes; the succeeding Greek and Gothic Revivals; and the schism between architecture and engineering, followed by the confusions of the nineteenth century. Mr. Fitch stresses the significant "leap" in structural design that accompanied the development of iron and steel; emphasises the influence of those revolutionary structures, Paxton's Crystal Palace, Roebling's Brooklyn Bridge and Eiffel's Tower; and records the impact of Victorian technology on building equipment. In the United States the new structural possibilities went largely unheeded until the rise of the "Chicago School," which was founded by H. H. Richardson, vitalised by the original genius of Louis Sullivan, and afterwards sustained by his pupil Frank Lloyd Wright. The high hopes of the new movement were, however, to be shattered in 1893 when an Architectural Commission ("heavily weighted with Easterners") decided that the Columbian Exposition must be designed in the Roman style. Sullivan alone sustained the note of progress with his Transportation Building; but the defeat he had suffered drove him, as Mr. Fitch says, into "isolation, abstraction, mysticism," and Wright alone remained to carry on the torch of individualism and "progress." The dominance of the classic school, maintained largely by the popularity of the Ecole des Beaux Arts as a training ground for American architects, continued almost unchallenged until after the first World War, and it was not until the second Chicago Fair of 1933 that the United States had what Mr. Fitch calls its "first statement of modern architecture." Since then the movement has received fresh impetus by the influx of many modernist architects from Europe.

All this, and more, Mr. Fitch records in detail with admirable explicitness, but the chief stimulus of his book is found in the second part, where he deals with the extraordinary current technical achievements in building design and services and the infinitely greater promise of scientific research and inventive ingenuity. America is a country of contrasts, and the author gives what appears to be a fair picture of the contemporary scene. It will come as a surprise to many to learn that wood is still America's favourite building material and that in 1940 87 per cent. of all dwelling units were built of wood. Nor does he attempt to hide the grim side of the picture; in fact he stresses it—the slums, urban and rural, the failure of both State and private enterprise to cope with the housing problem, the shocking waste of life and property by fires, the congestion and the transport difficulties created by the skyscrapers, and the complete obsolescence of a large part of American building. At the same time he pays tribute to the excellence of much of the newer building.

Mr. Fitch, who by the way is technical editor of *The Arch tectural Forum*, is of course a modernist. He is completely scornful of tradition and is fired to enthusiasm by current achievements in contemporary design and structure and the promise of stranger things to come. He describes many experimental buildings and designs and revolutionary building techniques. There are windowless buildings in which the occupants work in perpetual artificial light; buildings suspended by cables and masts; buildings that hang from a central mast and revolve around it; buildings with roofs supported by Blimp balloons; buildings with their roofs supported and held in place by compressed air, like a pneumatic tyre (the consequences of a puncture seem to have been overlooked). Much of this is obviously eccentric and stands little chance, we should think, of ever becoming "standard practice." It reminds us of the remark of M. Auguste Perret when asked if the potentialities of reinforced concrete had yet been fully realised: "There are things one does not do." Nevertheless, the potentialities of scientific research and invention in relation to what Mr. Fitch calls man's "atmospheric, thermal, luminous, sonic, spatial and animate environment" are immense and he adumbrates many of them brilliantly, even prophetically.

The logical consequence of it all seems to be an architecture, if indeed one can call it that, from which all art is banished. Mr. Fitch senses the danger. He notes an "emotional aridity" in the work of M. Le Corbusier, and admits that modern architects of the mechanistic type are beginning to wonder if the baby has not been thrown out with the bath water. These doubts are wholesome and may presage better things in the æsthetic sphere.

We note, by the way, from some biographical particulars on the dust jacket of this book that Mr. Fitch himself lives in "a graceful Manhattan house (circa 1830)" which, rather oddly, is "barely kept afloat by dint of constant bailing, like a boat about to founder." There must be *something* about a traditional house after all, even one that seems to be on the point of going down for the last time. Whatever one's views on the question of architectural style, here is a book that should be read by all who wish to be well informed on past, present and potential building developments in the United States. It is fully illustrated.

* London: B. T. Batsford. Price 25s.

NOTES AND NEWS

Four New D.S.I.R. Films.

IT is to some extent unfortunate, but inevitable that a number of private firms, connected in one way or another with building work, have realised the potentialities of films for publicity purposes and have produced pictures most of which, to a greater or lesser degree, have been plain advertisements.

The four new sound films made and issued by the Department of Scientific and Industrial Research are a refreshing contrast. Those discreetly phrased, but unmistakable, "sales talk" sentences are absent from the well delivered commentaries and the films themselves are interesting as well as informative.

Briefly, "How tree roots can damage building" is an explanation of its title; "Experiments in block laying" describes the effect of block size on building output; "Foamed slag concrete" is the story of the development of a new building material from a waste product; and "Building on shrinkable clays" describes the difficulties that may arise with foundations on shrinkable clays and a method of overcoming these by the use of short bored piles.

Copies of any of these films will be made available free to architectural and building schools, trade and professional associations, etc., on application to the director of D.S.I.R. They are also being shown at the Building Exhibition.

Festival Gardens Company.

A COMPANY has now been formed to construct and operate the Pleasure Gardens to be laid out in Battersea Park in connection with the Festival of Britain, 1951. The board of the company will consist of 14 directors. The chairman is Sir Henry French, who is the Director-General of the British Film Producers' Association and a member of the Council of the Festival of Britain, 1951. The following have agreed to serve as directors: Lord Aberconway, Sir Charles Cochran, and Lord Latham.

Representing the London County Council will be Mr. I. J. Hayward, Alderman D. H. Daines, and Sir Howard Roberts. Mr. G. J. Hill, vice-president of the Showmen's Guild of Great Britain, and Major M. L. Joseph, chairman of the National Amusements Council, will represent the National Amusements Council; and the Festival of Britain authorities will be represented by Mr. Gerald Barry, Mr. Bernard Sendall, Mr. George Campbell, and Mr. Cecil Cooke. The name of one other director will be announced shortly. The chairman and directors will give their services without fee.

Tidying-up Blitzed Sites.

THE Town and Country Planning Association is to hold an exhibition giving practical illustrations of work done by the Hornsey Borough Council in removing some of the war's scars from the borough. Hornsey is not the only authority to have undertaken work of this kind, but it is hoped that the example of Hornsey and other authorities will be widely followed. The exhibition is to be opened by Mr. Gerald Barry, Director-General of the Festival of Britain, 1951, on Monday, November 21, at the Planning Centre, 28, King-street, London, W.C.2, and will be open daily from 10 a.m. to 5 p.m. until Friday, November 25.

School Costs and Standards.

MR. LOUIS DE SOISSONS, who is engaged in laying out the War Military Cemeteries in Italy has been appointed architect to Plymouth College. He was in Plymouth on October 25 and 26 dealing with architectural work in that City and in South Devon. The problem in Plymouth, from the housebuilding point of view, is similar to that to be found in many industrial centres. The number of houses being built there to-day is one-third fewer than the number built a year ago, while the number of operatives available has not been reduced.

The explanation, a correspondent suggests, is that the labour available is being used for the building of schools and repair work. Costs continue to be on the increase and, as a result of the recent cuts in imports, are expected to advance still further. The problem facing architects who are called upon to plan new schools is how to simplify the plans without lowering the standards to an extent likely to arouse violent opposition. It now appears that the only way to carry out the Prime Minister's promise to reduce the cost of school building is to lower standards of design and amenities for the pupils.

COMING EVENTS

Monday, November 21.

TOWN AND COUNTRY PLANNING ASSOCIATION.—Opening by Mr. Gerald Barry of an exhibition illustrating the work of Hornsey Borough Council in tidying bombed sites. Planning Centre, 28, King-street, W.C.2. 5.45 p.m. (Exhibition will remain open until November 25.)

TIMBER DEVELOPMENT ASSOCIATION.—"Modern Methods of Timber Utilisation," by Mr. B. A. Jay, M.A. Maidstone Technical College. 7.15 p.m.

Tuesday, November 22.

N.F.B.T.E.—An "At Home" gathering, presided over by Mr. and Mrs. Norman Longley. Building Exhibition (N.F.B.T.E.-L.M.B.A. Club Room), Olympia. 2.30 p.m.

CHADWICK TRUST.—"The Influence of Modern Methods of Surveying on the Advancement of Public Works Engineering and Town Planning," by Professor C. A. Hart. University College, London, Gower-street, W.C.1. 2.30 p.m.

THE HOUSING CENTRE.—"The Conservative Party Policy on Housing," by Mr. J. E. Powell. Housing Centre, 13, Suffolk-street, Pall Mall, S.W.1. 1.15 p.m.

R.I.C.S.—Annual Dinner of Quantity Surveyors' Committee. Grosvenor House, Park-lane, W.1. 6.30 p.m.

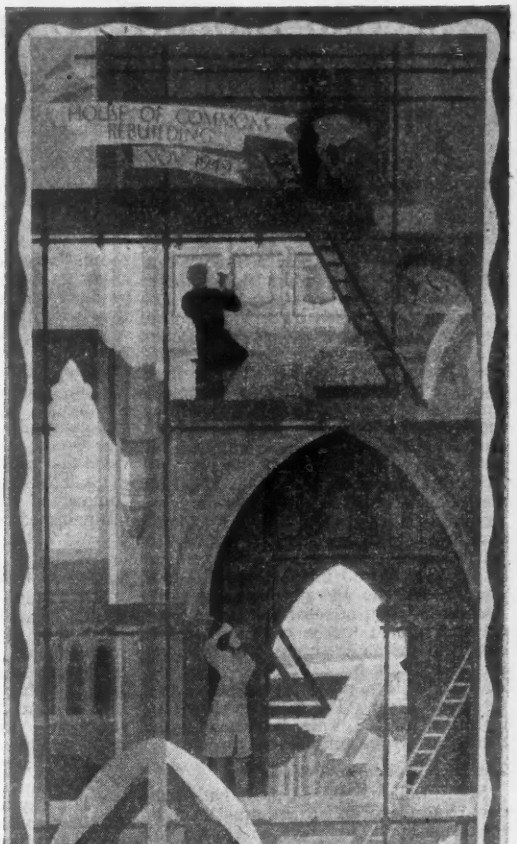
Wednesday, November 23.

TOWN AND COUNTRY PLANNING ASSOCIATION.—"The Aims of Planning," by Mr. F. J. Osborn. The Planning Centre, 28, King-street, Covent Garden, W.C.2. 6.15 p.m.

ROYAL SOCIETY OF ARTS.—"Craftsmanship in Modern Education," by Mr. J. Howard Whitehouse, M.A., F.R.S.A. John Adam-street, Adelphi, W.C.2. 2.30 p.m.

L.C.C. BRIXTON SCHOOL OF BUILDING.—Annual prize distribution, conducted by Mr. Anthony L. Peyman, O.B.E., a representative of the N.F.B.T.E., on the Building Apprenticeship and Training Council. County Hall, Westminster. 7 p.m.

NATIONAL FEDERATION OF ROOFING CONTRACTORS.—Annual Banquet. Grosvenor House, Park-lane, London, W.1. 5.30 p.m.



BUILDERS' CLUB AT OLYMPIA. This painting of building work in progress on the new House of Commons, executed by G. Foster Fletcher, forms the centre-piece of the L.M.B.A.-N.F.B.T.E. Builders' Clubroom at the 23rd Building Exhibition, which opened at Olympia yesterday. The Clubroom itself has been designed by H. Warren Wilson, A.R.C.A.

Thursday, November 24.

TOWN AND COUNTRY PLANNING ASSOCIATION.—"Village Planning," by Dr. Thomas Sharp, M.A., D.Litt., M.T.P.I., L.R.I.B.A. The Planning Centre, 28, King-street, Covent Garden, W.C.2. 6.15 p.m.

NATIONAL HOUSING AND TOWN PLANNING COUNCIL.—Annual conference. Royal Pavilion, Brighton. 10 a.m.

FROM "THE BUILDER" OF 1849

Saturday, November 17, 1849.

A wooden station, of a wretched description, it is said, has been provided by the North Midland Company for Bingley, a town containing 7,000 inhabitants. "It consists," says a contemporary, "of a clerk's room, about three yards square at one end, a small open shed in the middle, and at the other end a room similar to the clerk's, dignified with the name of the 'Ladies' waiting room.' During wet weather the clerks transact business with umbrellas over their heads to protect themselves from the rain dropping through the roof. In the open shed are huddled together 1st, 2nd and 3rd class male and female passengers, sometimes for nearly an hour, exposed to all kinds of weather. . . ." The era of railway *economy* seems to be superseding that of *extravagance* with a vengeance.

"SECOND THOUGHTS ON PLANNING"

Mr. Lionel Brett's Address to R.I.B.A.

THE limitations of planning control were discussed by the Hon. Lionel Brett, M.A., A.R.I.B.A., in a paper on "Second Thoughts on Planning," read before the R.I.B.A. on Tuesday night. The President, Mr. Michael Waterhouse, was in the chair.

The planner, said MR. BRETT, like the architect, needed to know a little about a lot of things, but, unlike the architect, his guardian angel was not beauty but common sense, which made him a much more familiar and approachable character. Woe betide him, therefore, if he affected to clothe what the common man rightly suspected of being a common-sense decision in any kind of mysterious verbiage. The planner, like the politician, should be no superman but a representative. A good deal of the unpopularity of planners was due to the suspicion that at the back of their minds were airy visions, shapes of things to come and a glass and chromium metropolis which no one wanted. "I am inclined to think," declared the speaker, "that if one half of the energy which has gone into the creation of ideal forms had been devoted instead to the education of the citizen in the basic purposes of planning we should all be better off. For this reason, I believe, posterity will rate David Lilienthal of the T.V.A. higher than Le Corbusier of the Ville Radieuse in the field of activity I am discussing."

The Significance of Prejudices.

Many well-intentioned plans had foundered on the obstinate determination of the Englishman to erect shacks in the back garden, to live in his kitchen and to boycott cycle tracks. Those prejudices were of the greatest significance. At the moment one's general impression was that they were anti-social. There were resistances to terrace houses, to flats, to shared open spaces and to the removal of lonely and socially moribund agricultural settlements, and we concluded that the English were congenitally unco-operative and ungregarious. But if we looked back 100 or even 50 years we found a drift to the towns where life was intensely matey though squalid and, above all, a stolid resistance to the healthy, if draughty, puritanism of the Garden City Reformers. The grubby sociability of the slums seemed just as awkward an obstacle to our predecessors as the snooty isolationism of the suburbs seemed now to us. "I wonder if it often occurs to planners," remarked the speaker, "that it is not the public who keep changing their minds but the planners themselves. . . . My chief complaint against social planning, therefore, is that it keeps changing its emphasis."

Just as social life had a mysterious and elusive beauty so had visual beauty, and we were bound to look critically at any system of controlling the appearance of buildings. That some sort of architectural discipline was necessary seemed obvious enough, said the speaker, who proceeded to postulate a set of principles as follows:—

An absolute control over the location of new buildings and, in towns, over their floor space and daylighting.

Designs of architects ought not to be censored on æsthetic grounds by non-architects.

With regard to the great mass of small buildings and alterations not carried out by architects at all, to teach people to use their eyes and then accept their judgment, however much we disapproved of it. There was no more rapid route to the Nazification of the architect's art than to preach visual education one day and practise visual censorship the next.

With regard to the last of these principles, said Mr. Brett, we must hope that people were learning. Meanwhile there must be the power to say No, and the problem was how to limit that power so that it did not stunt the growth of a new vernacular. He thought that the clue was to be found in the listing of outstanding buildings now being carried out by the Ministry of Town and Country Planning. It would be realised that something like 90 per cent. of new buildings would be outside control, but provided that protection were given to special cases, it was better that we should accept commercial vulgarity in the ordinary undistinguished shopping street than improve decency at the cost of life and colour.

A Lack of Refinement.

Mr. Brett continued: "Even the limited degree of control I have put forward will, of course, be too much for some people. It will certainly be too little for others. One must ask both sides whether they really prefer a vast blanket of æsthetic control which is manifestly too generalised and slapdash to stop the Philistine, yet too insensitive to speak the same language as the trained designer.

"The way this question of æsthetic control has so far been handled is typical of a lack of refinement in the whole planning machine which is naturally enough its outstanding characteristic at the moment. Development control is ready enough to chase the small man around but quails before the big man, particularly if he is backed by the Board of Trade, the Ministry of Fuel and Power or the War Office. It is of the nature of physical planning that its failures should be more spectacular than its successes. Still, making every allowance for this, it is a grievous disappointment to find the regional machinery so weak; to find London, for instance, still growing in spite of the categorical decision taken in 1944 to stop its further growth, and growing in its old haphazard way. If, on appeal to the highest authority, hydro-electric stations and pipe lines are to be allowed to industrialise Snowdonia, cement works to dominate the Peak, and the isle of Purbeck to be turned into a desert by obsolete weapons of war, the plain architect, financially innocent as he tends to be, begins to wonder what is gained by all those forms he fills up. There have been since the war a depressing number of projects which have had to be palliated by assurance that the elevations will be designed by a distinguished architect and approved by the Royal Fine Art Commission—a danger signal which nearly always means that somebody is flouting the elementary rules of industrial or rural zoning.

"Rose-tinted Blue-prints."

"It is no use being a perfectionist in an ironical world; we all know that. Some of our blue-prints for the post-war world were a little rose-tinted (if I may be allowed to mix my colours); all the same it is a little bitter to find the bluff so promptly called by the business man, the industrialist, the statutory undertaker and the rest of the hard-headed world. The planner, barking at the heels of the Forestry Commission and the pampered exporting industries, has been found to have very little bite. Perhaps the moment has come to summarise the reasons why.

"The planner suffers more than anything because in a world of increasing specialisation he is the one official generaliser. At any public inquiry the rest of the expert evidence is technical enough to impress the Inspector, let alone the public, but 'sound planning principles' are no sooner enunciated on one side than they are contradicted from the other. As against the man who can state that a thing is *technically impossible*, the planner can often only say that it is injurious to amenity—a milk-and-water statement in all conscience. Undoubtedly the remedy for this state of affairs will be found in specialisation inside the planning profession. This is only another way of saying that the planner must recognise his limitations and try to operate inside them. It is not for him to cross swords indiscriminately with the forester on ecology, with the industrialist on production costs and with the architect on design. But he can, and eventually must, specialise either in landscape or in economic planning or in social development or in urban design so that he can talk the expert's language while standing clear of the expert's commitments. The essential thing is still to stand clear, to retain the long view both backward and forward.

Two Differing Worlds.

"Of course, it is conceivable that the binding together of diverse experience, which is the function of art, is beginning to be beyond our powers as planners. I cannot help feeling sometimes, in trying to design little houses and streets right alongside a great airfield upon which supersonic aircraft whine and roar all day, that here are two fundamentally irreconcilable worlds; the world of home and personal relations and the nightmare world of contemporary science. Perhaps Le Corbusier and Mumford, attempting, as had their predecessors, to bring technics into the grasp of art, were attempting what has become impossible. Perhaps a rift is opening in our civilisation which can only be closed by events quite beyond the scope of a paper on town planning.

"These are speculations which, if we want to build anything, we had best leave well alone. After all, the test pilot is quite happy spending half his life in a polished aluminium shell and the other half in a fake Elizabethan saloon bar. So why worry?"

COMPETITION NEWS

Extension to Medical School, Edinburgh University

THE University of Edinburgh invite architects to submit designs in competition for the extension of the Medical School on the north side of George-square, Edinburgh. On the nomination of the President of the Royal Institute of British Architects, the University have appointed Mr. A. G. R. Mackenzie, A.R.S.A., F.R.I.B.A., to act as assessor. Premiums of 1,000, 600 and 300 guineas will be paid to the authors of the designs placed first, second and third respectively. The conditions of the competition may be obtained on application to the Secretary to the University, Old College, South Bridge, Edinburgh, on payment of two guineas. Applications for conditions should be received by December 31, 1949. The closing date for submitting designs is September 2, 1950.

ARCHITECTURAL SCIENCE BOARD

New Techniques in Building

A DETAILED description of the work done by the research organisation set up to provide a service for the building industry in determining the effects of various techniques, new and old, on productivity and cost of building, was given by MR. R. FITZMAURICE, B.Sc., M.Inst.C.E., Hon. A.R.I.B.A., Director of Research (Building Development), Ministry of Works, at a meeting of the Architectural Science Board, held at the R.I.B.A. on November 14.

Mr. Fitzmaurice began by saying that building in most countries was one of the most conservative of industries, and was highly resistant to change. Nevertheless, we had seen quite an important process of change in the lifetime of many people now working in the industry, and he proposed to discuss only those changes in technique which were aimed at reducing costs and increasing productivity. He continued:

There is the question as to whether there is any need for change in building technique. Assuming that changes are possible and that they may be beneficial in that they may increase the production of buildings in terms of the unit of effort expended, whether that be man/hours or £ s. d., surely no one can deny the importance of giving them a thorough trial. The programme in front of the industry is virtually limitless and, apart from these considerations, change is inevitable. Ingenuity and inventiveness are not likely to be less strong in the building industry than in other industries, and it is not possible to stand still. Either we go forward or backward. It may be asked—where is the place in all this for a Scientific Research Unit? So far as the Ministry of Works is concerned, the object has been to set up a research organisation to service the industry by recording and analysing the effects on efficiency of various changes in technique.

As a general rule, investigations into the problems of production cannot be carried out in a laboratory. It is necessary to obtain the required data in factories and on building sites, and to work in very close collaboration with manufacturers and builders. This immediately introduces complications, because the aim of a manufacturer or builder is to make or build something and to get paid for it, and the collection of data sufficient for scientific examination is not normally considered desirable or necessary.

For examination of the larger and more obvious variables it is possible to extract the necessary information from manufacturers' and contractors' normal records and accounts. When, however, a more detailed examination is required, as, for example, to ascertain with some precision the effect of substituting a new method for a particular operation, it becomes necessary to use special observers to obtain the required information. A certain amount of this work has been carried out by observation of contracts for the erection of houses which have been made between the Ministry and the contracting firms for the special purpose of studying particular systems of construction.

Other investigations, and equally satisfactory ones, have been made where contracting firms have given facilities for observers from the Ministry to obtain the information required from their current building contracts. Whatever form the investigation takes, it must be planned from the first on a statistical basis. The number of variables to be found on a building or manufacturing project is so large that their ultimate separation must depend on statistical examination. It has been found, however, when the appropriate statistical techniques have been developed, that it has been possible to reach positive conclusions from a very complex system of variables. In short, we find that work of this kind calls for a research team headed by a mathematical and statistical unit to plan, to analyse and to interpret the data collected.

On the industrial side, however, it is equally necessary to employ technicians with sufficient industrial experience to understand the physical form and nature of the processes which are under investigation. The mathematicians and the technicians must be welded into a team, and this is not the least of the difficulties in building up a research unit of this kind.

Before the war, conditions in the building industry in Britain were very stable. There were ample stocks of materials and a pool of labour to draw on. Organisation of building operations was very simple because the work followed a well-known pattern. Since the war the supply of materials has been erratic, and there has been no surplus labour. It has consequently been necessary to develop a very much higher degree of organisation in order to keep work running smoothly. Much ingenuity has been devoted to the production of standard methods of scheduling operations and charting progress, and these organisational aids are to be seen on the majority of up-to-date building sites. A considerable amount of work has also been done on methods of recording current costs, and there is a general measure of agreement that an all-round improvement in organisation is overdue. A great deal is now being done on these lines, and rational systems of programming, progressing, costing, incentive bonus methods, etc., are being actively introduced. The question may well be asked: "What is the effect on efficiency?" Can we make any quantitative assessment of progress to date? The author believes the answer to be "Yes." Following the operational research method—which is the main theme of this paper—a pilot survey has been made of productivity in house-building in the years 1947-48. The survey was made on 165 contracts containing just over 3,000 houses. The necessary data had to be extracted from contractors' accounts by the research teams, and the author cannot emphasise too strongly his appreciation of the help and encouragement which the builders gave in this work. It was a difficult operation to plan for the first time, and had the response been less generous it would have been most difficult to have brought the work to a satisfactory conclusion. It is a very good augury for the possibilities latent in a partnership between the industry and an operational research unit.

By developing a suitable statistical technique, it was possible to arrive at a firm conclusion as to the general trend of productivity over the period and as to the effect of some of the major variables. The following conclusions may be of interest. There was an improvement in productivity throughout the two years independent of the effect of incentive payments, which were introduced during the period. Man-hours fell by 25 per house per month. Incentive payments reduced the number of man-hours required per house. On the average, 60 man-hours were saved for every £5 of bonus paid per house. As an example of these major effects, there was a fall during 1948 of 400-500 man-hours per house, and of this 300 were saved by the general increase in productivity and 100-200 by the increase in incentives paid during the period. Inferior workmanship was *not* associated with lower man-hours. Variations in specification produced a variation of 5 per cent. in cost on either side of the average—a fact which will doubtless be of particular interest to the architect.

There were many other interesting conclusions on such questions as the size of contract, the region, the amount of work sub-contracted, etc.; space does not enable them to be discussed at length here. As a general average, 3,080 man-hours were required to complete a three-bedroomed house of an average size of 935 ft. super, without outbuildings. The range of

Fig. 1.—A modified trenching machine for digging house foundations.

Fig. 2.—A typical builders' hoist.

variation in man-hours was found to be very wide. It varied from just below 2,000 man-hours to about 4,500 man-hours. A more detailed survey is being made of the group of contracts where the man-hours are well below the average, to see whether the main factors leading to these high productivities can be identified and notified to the industry.

It will be shown at a later stage that special problems have arisen from the increased use of machinery on building sites. Where materials are handled by machinery it is necessary to make exact provision for unloading and stacking, and to organise the work so that an expensive machine is continuously employed. This calls for planning and forethought of a much higher order than when materials were mainly manhandled. There has been a tendency in the past to regard these organisational matters as the exclusive province of the contractor, which only come into play when work starts on the site. A serious question arises as to whether the organisational studies should not start right back at the design stage.

If the term "machinery" is used in its widest sense, the object of almost every change in technique of building has been to make greater use of machinery in order to increase production and to lower cost. In considering how the use of machines is likely to develop in building, it is convenient to have a clear picture of their functions, and for convenience it is proposed to classify them in three main types.

The first and most elementary family of machines are those which replace human physical effort by mechanical power. They include machines which lift and carry out materials, which excavate the soil and which crush or mix our materials.

The next family of machines are those which shape our materials. They saw, plane, drill, tap and mould to the most complex form which may be needed. The important characteristics of this family of machines are that they work very fast, but also that they work very accurately. It becomes possible to work to much finer limits of dimensional precision than is possible by the equivalent manual process. In fact, if properly set up, the machines cannot be inaccurate.

Lastly, there is a family of machines which, in combination with those which shape, are enormously important. These are the machines which measure and set out work. They include jigs, gauges, profiles, moulds, etc., and their intelligent use has probably done more to transform production technique in other industries, but their use is only just beginning to be known in the building industry.

By way of illustration of the application of these principles, the following are some examples of recent developments in the use of machinery.

Before the war on a typical housing site the foundations were always excavated by hand. Small excavating machines have recently been developed to deal with house foundations and Fig. 1 is a modification of a large trenching machine reduced in size for digging house foundations. It is powered by a 10-h.p. engine.

Before the war, the usual practice on a typical housing site was to unload the bricks and other bulky materials on the roadside. They were distributed to the craftsmen by labourers, who carried them in barrows and hods and up ladders. Since the war there have been quite a number of developments in this field. Bricks are arranged in small stacks which are picked up in specially designed barrows which can be wheeled direct to their position alongside the bricklayer at his work. A logical development of this, and one which will doubtless come in time, and which is already contemplated, is for the brick manufacturer to package or stack his bricks for dispatch in suitable batches for mechanised handling in this way on the building site.

Bricks are only a single illustration, but we can imagine the drawing of the kiln with mechanised aids into the appropriate batches which will not be manhandled again until the bricklayer puts them into their place in the wall.

Fig. 2 shows a typical hoist for small building projects. Hoists have become almost universal since the war, and some are mobile and can be erected very quickly.

Materials were almost invariably distributed on small building sites by wheelbarrows of small capacity pushed by labourers. There are several developments of small power-driven barrows which are coming into use in some numbers, and a representative type is shown in Fig. 3. The essence of the development of such a tool is simplicity. In this case the power unit is a small petrol motor which is connected to the driving wheels through a clutch. There is no gearbox and the machine is reversed by turning the motor round through 180 deg.

A word is necessary here as to the part played by the Ministry in development work of this kind. The Ministry of Works set up an organisation for the development and testing of mechanical equipment for the building industry; this is known as the Field Test Unit. The process of development follows a logical pattern; an analysis is made of the actual labour employed on the various operations in building; this analysis shows where there is some likelihood of a machine being useful, and the performance of the machine can be specified at that stage, including the amount of money the operation can carry if the machine is to justify itself.

The prototype machine is designed to the specification, and in order to evaluate the principle of operation prototype machines are built. They are then rigorously tested for performance and modified as necessary, and then go on to building sites for a thorough field trial. Accurate data are obtained of their performance on the site with the collaboration of builders, and finally these figures are analysed and the case for or against the production of the machine is then complete. A word is necessary here to put on record the very generous response of builders in providing facilities for these field trials.

An example of what can be done in this way is a concreting skip attached to a small agricultural tractor which has just come very successfully through a field trial. For the foundations and ground

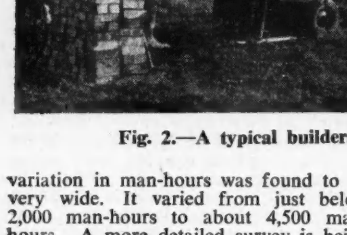


Fig. 3.—Power-driven barrow.

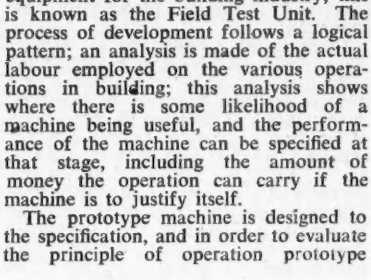


Fig. 4.—Tractor fitted with hoist.

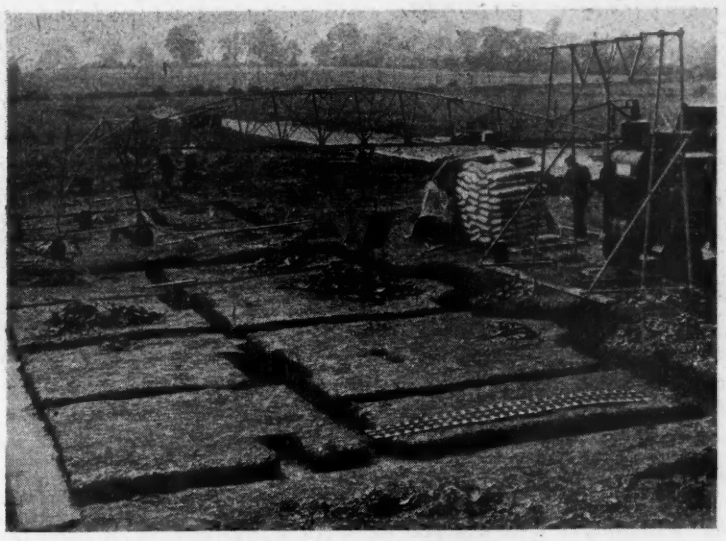


Fig. 5.—Light boom with travelling skip.

slab of a small house it is necessary to place anything from 4 to 8 cubic yards of concrete. This material is normally wheeled from the mixer in barrows to its position in the foundations, where it is tipped and spread. The output of the mixer is controlled by the rate at which the barrows can remove it, and the fresh batch cannot be introduced into the mixer until all the previous mix has been removed. By designing the skip so that it is low enough to take the discharge from the mixer and big enough to take the whole batch, it is obvious that the mixer is free from the moment of discharge. The small tractor, which is a standard agricultural machine slightly modified, can negotiate the roughest site and can dump the concrete right into its final position. The trial showed that the labour distributing the concrete could easily be halved, but at the same time the output of the mixer could be doubled.

For the small site it is always a problem to find continuous employment for a machine, so that it is desirable, wherever possible, to devise multi-purpose machines. The same small tractor can be fitted with a dozer blade which enables it to be used for back-filling trenches or cleaning up piles of concrete aggregate. Fig. 4 shows it fitted with a small hoist by which means it can be used as a stacker to load an upper stage with bricks or other materials. A model of this machine incorporating skip and dozer blade has also been produced.

Another simple device for distributing concrete over the site of a pair of small houses is shown in Fig. 5. This consists of a light boom carrying a travelling skip. The end of the boom adjacent to the concrete mixer is fixed, and the other end can be moved to cover any part of the site. In the model of this device, which is going into production, the boom will be made in aluminium alloy.

The machines discussed so far are all in the first and most elementary family. A start has been made in Britain, however, in the application of the third type of machine—the jig for setting out—to traditional building.

The traditional method of building walls is to set up the corners in brick or block by means of a plumb rule, and to fill in with bricks or blocks which are laid to a line which is levelled to the joints at the corners. The idea can, however, be taken a stage further and the plumbed profiles transformed into a complete jig; there is then a possibility of speeding up wall construction, but also of producing a building carcase accurately dimensioned. This immediately opens up quite an exciting range of possibilities, because precision-made assemblies of components can be introduced into an accurately dimensioned shell. Partition units, plumbing and heating assemblies, wiring assemblies, stairs and joinery should fall into position. Second fixings could be enormously reduced. The jig is being exploited in Britain, and it may well prove that an important revolution is being introduced. The results obtained to date have been highly satisfactory, both in respect of productivity and cost, but the quantitative assessment of the possibilities of the jig for general application has still to be made.

New Mechanised Processes.

We have had since the war various developments in mechanised production of new components for building, as well as of complete systems of building. As an example of the production of components, an interesting example is that of the prestressed concrete floor joists for houses. Britain has insufficient resources of softwoods for traditional building requirements, and has depended in the past on imports from the Baltic and from North America. A considerable amount of work has been done in the production of prestressed concrete joists. The special study in this case has been directed to the costs of production.

It is desirable to digress a little at this stage and consider the implication of new methods of production of building components on the classical methods of design and control. One of the most potent instruments in producing the enormous amount of equipment needed to win the war was the process known as "quality control." This may be defined as a process by which the full rigour of control is applied at the point where it matters instead of being applied universally at all stages. The control is essentially a statistical conception, but, properly applied, it yields very large economies and avoids a very large amount of waste in effort and material. We should not lose sight of the importance of this particular advance in technique. In terms of economy in material it may often yield dramatic savings, and in economy in labour the result may be almost equally significant. The elegant, small, prestressed concrete joist shown in Fig. 6 did not just happen; the process described above has been taken through all its stages and, in the result, tenders have been received for commercial production at a very modest price.

The first problem was to arrive at a suitable mean strength and range of variability related to the method of control used in manufacture. Since the joists are to be made on large-scale production where strict control of quality must be enforced, the problem became one of statistics, as described above, and the effects of the many possible variables have been explored by large-scale testing to destruction and by statistical analysis of the results. This work was done on a pilot production plant at the Field Test Unit, and the Building Research Station have given the greatest help in the interpretation of the test results.

There are two main methods of production of precast, prestressed concrete

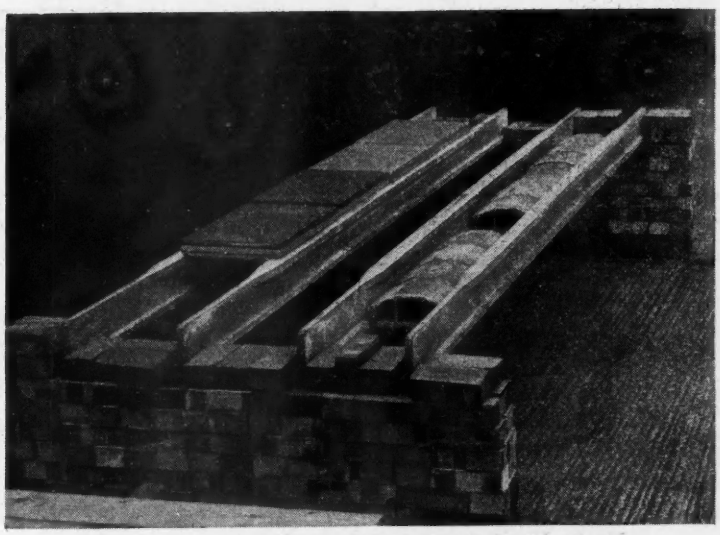


Fig. 6.—Prestressed concrete joists.

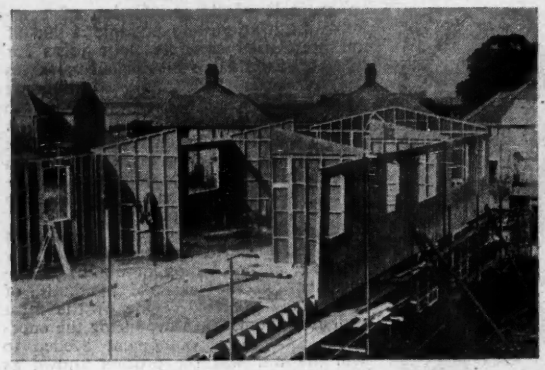


Fig. 7.—Wooden-framed houses under construction.

Fig. 8.—Wooden-framed houses completed.

components: the long line and the individual mould method. The individual mould has many advantages from the point of view of cheapness of production, but everything depends upon the rapid development of strength in the concrete in order that the wires can be released and the mould re-used.

By experiments in pilot production on a semi-commercial scale, it has been possible to obtain consistently a mean compressive strength in the concrete of 5,000 lb. per sq. in. at four hours with a range of variation sufficiently narrow for the requirements of production. This result has been obtained by using a rapid-hardening Portland cement, compacting by simultaneous application of pressure and vibration, and by suitable heat treatment. The result is important economically, because the moulds can be used twice in the working day. The process has been highly mechanised, and in the result very low tenders have been received for the manufacture of the joists.

The problem still remains to be solved of finding out as quickly as possible how the prestressed concrete joists can most efficiently be used in houses in substitution for wood. This will involve a close study of floor construction, again on the pilot scale, to acquire the necessary data on the cost of handling and fixing, and to establish the simplest and cheapest technique. This, again, is essentially a statistical problem, and will entail accurate records over a sufficient range of sites to enable a reliable statistical assessment.

Finally there remain to be considered the various methods which have been the subject of experiment in Britain for the erection of complete house structures. The trend of development has gone through various phases. The first types were based on the production of a framework to which an external covering might be quickly applied. Several variants were produced based on steel frames and reinforced concrete frames. Few of these houses were conspicuously successful. The loading in a small house is very light, and it is difficult to design a practicable frame for such light loads. Another difficulty is that of fixing linings and other components to steel and concrete, and many of the steel frames have included wooden sub-frames for fixing purposes, so that the quantity of wood required has often been sufficient to produce a load-carrying wooden frame.

By drastic economy in the use of wood it has been found possible to produce a wooden-framed house with wall and floor units made up in large panels for quick assembly. This house is shown in Figs. 7 and 8. The result is interesting because the quantity of wood required has been reduced to the very small amount normally allowed for a traditionally built brick house.

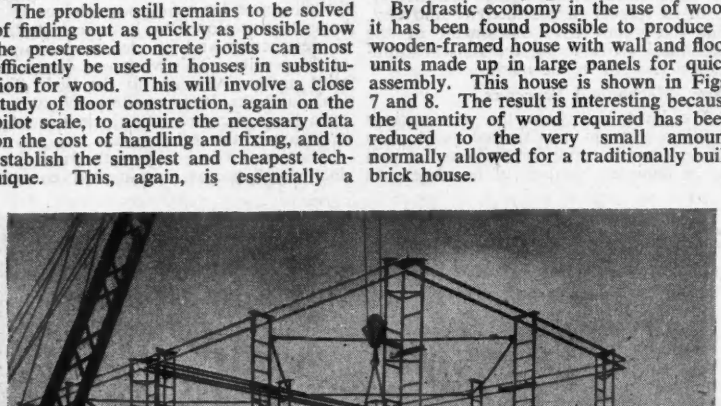


Fig. 9.—Use of precast concrete panels in house construction.

Large precast concrete panels for wall construction have been used successfully, and a house of this type is shown in Fig. 9. The panels in this house are assembled around a tubular steel jig, which is removed when the panels have been placed.

Houses with concrete walls cast *in situ* have to be regarded as non-traditional in Britain. In these cases success depends on the design of the formwork to allow of rapid erection and dismantling. A good system of formwork will perform the function of a jig, and it should be possible to fit accurately dimensioned components into a shell which has been built in this way. The extent to which this will prove successful has yet to be established, but a large-scale contract is just being started in Scotland based on a "no-fines" concrete shell.

Mr. Fitzmaurice then gave some figures which were typical of the results obtained to date with new methods of house construction. Full details of the figures, he said, were given in National Building Studies Report No. 4, H.M. Stationery Office, price 1s., and a supplement to that Report which was now in the press.

To summarise, the methodical study which has been made of house-building by new techniques has yielded results which have been disappointing in some ways, though highly significant in others. The actuating theory has been that structural components should be made to accurate dimensions in factories and that they should then be assembled on the site with a minimum of labour. In fact, the expected economies in labour have been achieved quite handsomely. The components have been made accurately and they have been assembled quickly and easily, but, and here is the pity of it, all this ingenuity has been lavished on the main structural components—mostly the walls—and it is a matter of common knowledge that the shell of a house represents at most a third of the total cost and labour element, so that the saving has only been effective on a third of the total. Actually, the non-traditional houses have been taking just as long to finish, and sometimes longer than the traditional building, and so the effect has not been very marked. If, as we now intend to do, we completely fabricate the interiors and finishings in the factory and put the structural shell up in any suitable way, whether traditional or non-traditional, the results on the total economy may prove much more striking.

A commencement has been made in this direction in Britain. About 100 houses have been erected using the system devised by the architect, G.

Schindler, of Zurich. Here prefabricated and highly finished panels comprising all interior linings and partitions are made in the factory. The framing of the panels provides formwork for a system of concrete posts and beams. The panels are assembled together on the site and the concrete is poured in the posts and beams. The external weather-resisting shell is then applied in any desired material.

It is proposed to carry out further experiments with factory-made, highly finished interiors in Britain in the next year or so, and the prototype houses are now being designed. The evidence at present available points to this being the most logical and profitable line to develop. Factory-made interiors of this kind can equally well be fitted into traditional shells where built on jigs, and this may be the most important development.

A considerable amount of work has been done in Britain since the end of the war on the development of new techniques for building. The main effort up to the present has come from the contractors and manufacturers, though in many cases architects have helped in the establishment of the new techniques. This is naturally the point where it is necessary to consider the position of the architect in these developments. At the present time there is insufficient consideration of the potentialities of new techniques at the design stage.

The conclusion is that the designer, manufacturer and constructor have somehow or another to be brought together at the design stage and to be made to pool their experience and knowledge for the good of the job. How to achieve this is beyond the scope of this paper, but somehow or other it will be achieved. This brings us to the point that a drastic change in organisation is likely to be forced on the industry by sheer weight of events.

In theory, design is complete before the manufacturer or contractor ever sees it. The contractor has legitimate grounds for complaint if he has not sufficiently full particulars in the way of drawings and specifications before he tenders. By definition, therefore, the design must be carried to a high degree of completion before the contractor is appointed, and, by definition, the contractor cannot be consulted in the vital stages of design when the method and organisation of the manufacturing and construction processes ought to be under continuous review. It is extremely difficult to see how the homogeneity which is so necessary can be achieved under existing conditions, and it is small wonder that building costs continue to rise.

Another difficulty of the existing organisation of the industry is that all questions of accountancy and payments are dealt with in terms of "prices" and not "costs." To increase production and decrease costs it is necessary to focus attention on "costs" and methods of costing. Very rightly the Ministry of Works is urging on the contractor and manufacturer the importance of a continuous review and analysis of their costs. Unfortunately, he has to maintain a parallel and duplicate set of records on a "price" basis, and there is no means under the present organisation of the industry for the architect to be joined in the paramount task of holding down costs at every stage in the work, starting from the earliest stage of design to the final completion of the job. Costs in themselves are not so important, but as a measure of the value obtained for effort expended they are absolutely vital.

Exterior view of houses after conversion.

CONVERSION

AT 22-23, HEREFORD SQUARE, S.W.7

ARCON, CHARTERED ARCHITECTS

THESE houses form part of the west side of Hereford-square. The two adjoining houses on the north-west corner were completely demolished during the war, and numbers 22 and 23 were extensively damaged. The houses were rebuilt to preserve the terrace elevation, the only alteration to elevational treatment being the removal of the third-floor balustrade in order to give an unrestricted view from the two flats at this level.

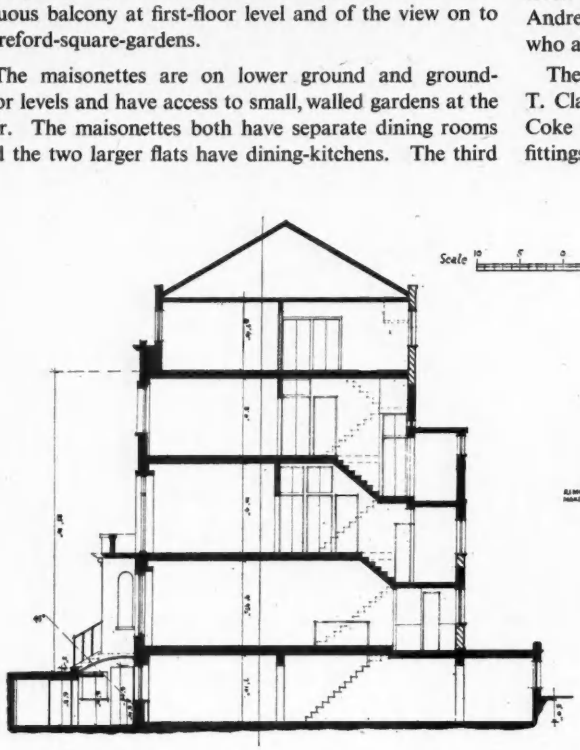
G

The houses have been converted into two maisonettes and four flats. The main rooms in all cases overlook the gardens in Hereford-square, which are well maintained and are the property of the Hereford-square tenants. The first- and second-floor flats are carried horizontally through both houses to take full advantage of the continuous balcony at first-floor level and of the view on to Hereford-square-gardens.

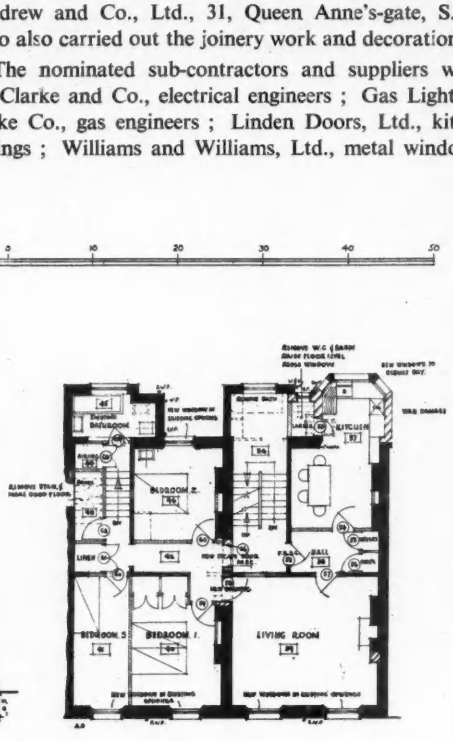
The maisonettes are on lower ground and ground-floor levels and have access to small, walled gardens at the rear. The maisonettes both have separate dining rooms and the two larger flats have dining-kitchens. The third floor is occupied by two small flats, the living rooms and main bedrooms of which also look on to Hereford-square.

The entrance to No. 23 gives access to all upper-floor flats ; the entrance to No. 22 gives access to one maisonette and the other has its entrance at lower ground-floor level. The main contractors were Messrs. Marshall Andrew and Co., Ltd., 31, Queen Anne's-gate, S.W.1, who also carried out the joinery work and decorations.

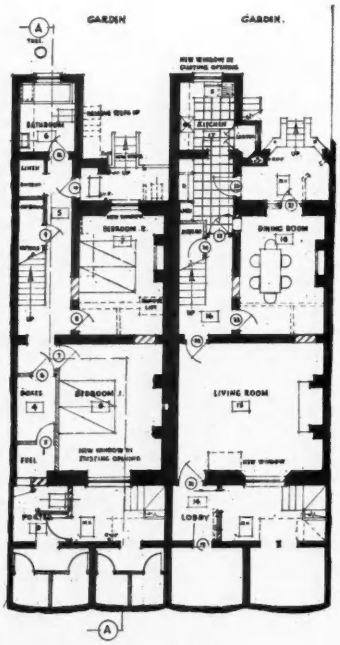
The nominated sub-contractors and suppliers were : T. Clarke and Co., electrical engineers ; Gas Light and Coke Co., gas engineers ; Linden Doors, Ltd., kitchen fittings ; Williams and Williams, Ltd., metal windows ;



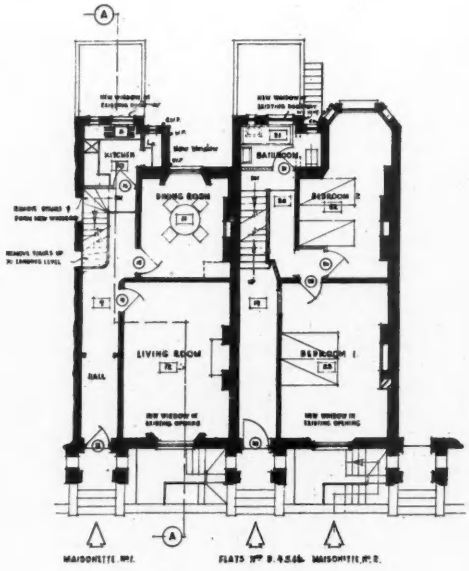
SECTION A-A.



SECOND FLOOR



BASEMENT

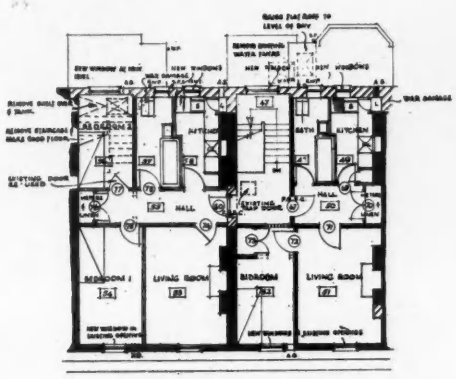


GROUND FLOOR

Nettlefold and Sons, Ltd., ironmongery ; John Bolding and Sons, Ltd., sanitary fittings ; and Finch and Co., fireplaces.

Appointed sub-contractors were : T. R. Rudd, John Tanner and Sons (London), Ltd., plasterers ; Structural Services, Ltd., sanitary engineers ; A. Vigers, Sons and Co., Ltd., flooring ; Scaffolding (Great Britain), Ltd., scaffolding ; Cope and Co., Ltd., tiling ; Kendall Artificial Stone Co., artificial stone ; Williams, Smith and Evans, Ltd., roofing ; James Clark and Eaton, Ltd., glazing ; and Henry Green and Co., Ltd., ornamental stonework.

CONVERSION AT 22-23, HEREFORD SQUARE, S.W.7



THIRD FLOOR

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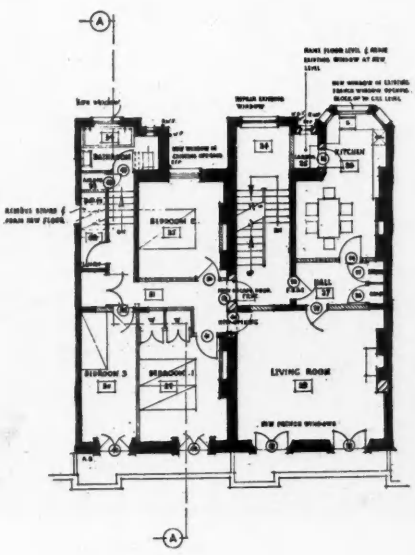
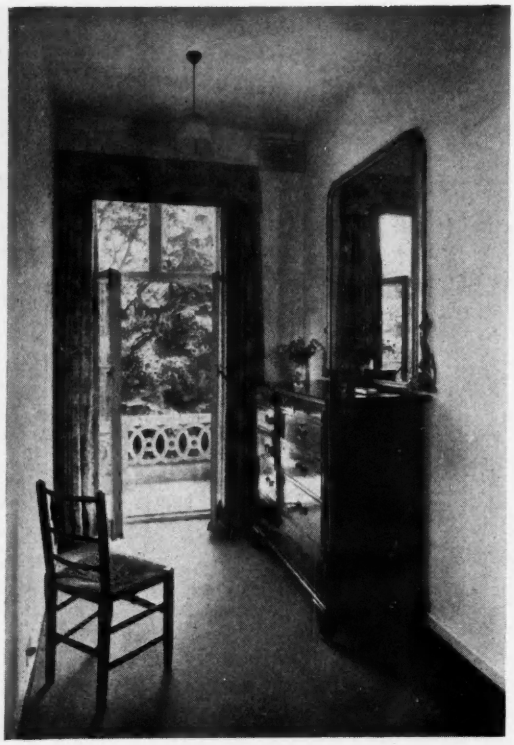


FIRST FLOOR

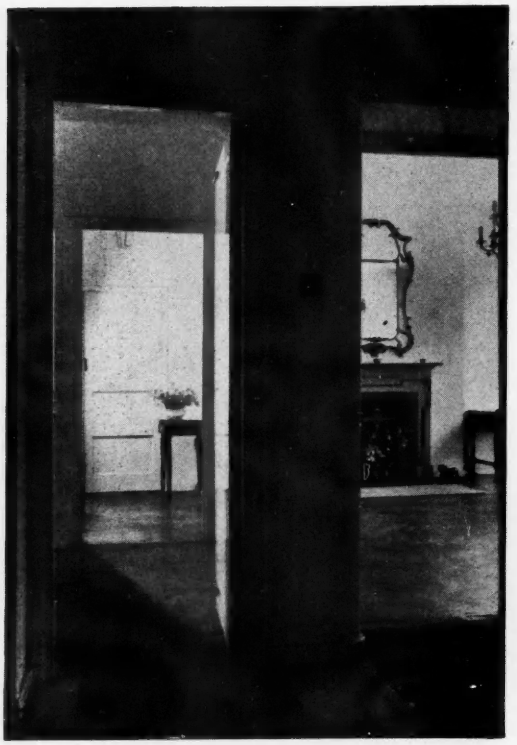
Approach to entrance of ground-floor and lower ground-floor flat.

Below: **The dining room with french doors to garden, ground-floor and lower ground-floor flat.**

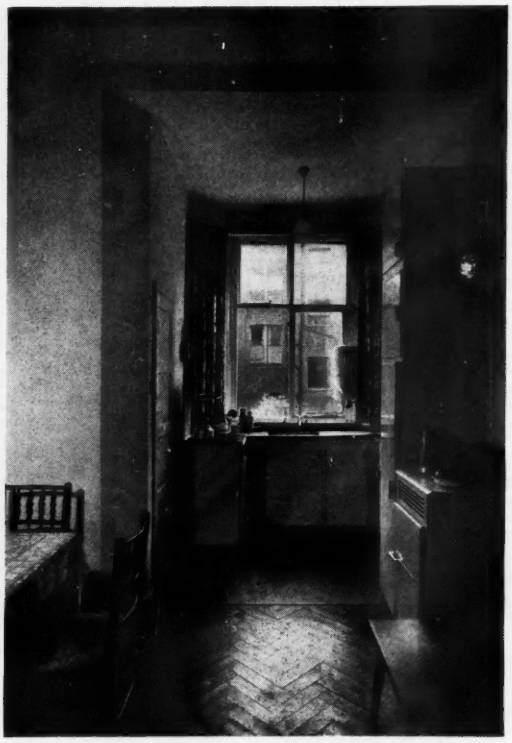


The dressing room.

The living room.



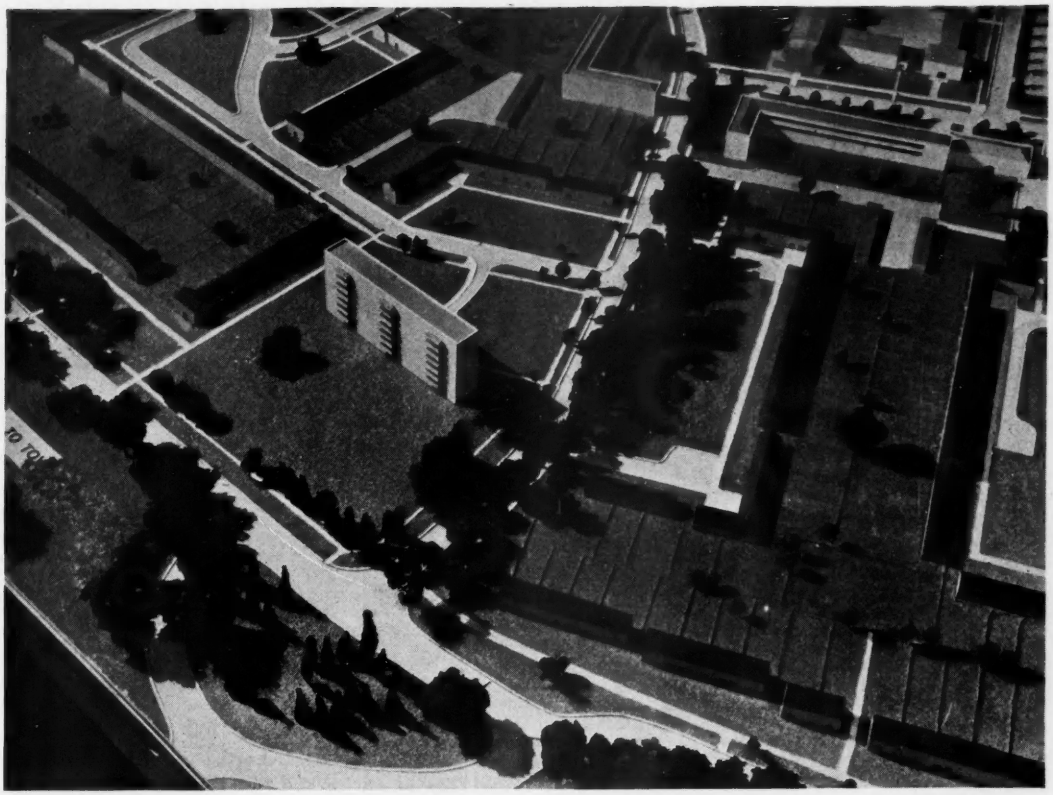
Entrance hall, looking into living room.



Kitchen, with occasional dining space.

The first-floor flat.

CONVERSION AT 22-23, HEREFORD SQUARE, S.W.7



OUTER RING DEVELOPMENT. Model showing layout of a new residential area.

THE HOUSING MANUAL, 1949

THE new Housing Manual, published yesterday by the Ministry of Health, contains plans for 32 houses, 23 flats, maisonettes and hostel units, eight old persons' dwellings, and 87 photographs of housing schemes built since the war. The layout studies illustrate the "house group and landscape" conception of site planning for rural, urban and redevelopment areas. These studies place emphasis on the need for giving proper attention to the three-dimensional aspects of design.

The following notes describe some of the new features:—

House Plans.—The house plans conform with floor-space standards that have been in operation since 1945. Some of the plans are similar in general arrangement to the smaller versions shown in the 1944 Manual, but many new types have been added. They now range from semi-detached and terrace designs for two-bedroom houses for four persons to four-bedroom houses for seven persons. Particular attention is drawn to the new type terrace plans. In these either the covered passage is eliminated by the introduction of a store within the house or the passage is private to each dwelling. Three-storey terrace house plans are included to meet the needs of areas of higher density. The superficial area of these plans exceeds their two-storey counterpart by about 100 sq. ft. Suggestions for elevations are illustrated by small-scale line diagrams. They are intended to show the varied treatment that is possible in the design of terrace houses and methods for linking pairs. By this means emphasis is given to consideration of the street scene as a unit of architectural design, a point which is stressed throughout the text. It is not intended that they should be copied as they stand; their purpose is one of indication only.

Old People's Dwellings.—The plans show five different types of accommodation. These meet the various requirements and preferences in different parts of the country.

Flats.—The plans for family flats are designed with staircase access. The open-approach balcony is used only for one- and two-room flats.

The floor-area standards follow those recommended in Circular 101/46 (issued to authorities in the London Region), except that intermediate types have been added and the floor area of the larger flats has been increased to enable adequate living rooms to be provided.

The *Maisonette* plans show dwellings for four- and five-person households, and illustrate a convenient and economical type of development which will meet the needs of many in areas of higher density.

Plans incorporating suggestions for *Hostel Units* appear in a Manual for the first time, and show the type of accommodation which can be provided under the new Housing Act.

Layouts and Site Planning.—Special attention is given to the importance of environment by the inclusion of study layouts for rural, urban and redevelopment areas.

i. *Village Infilling and Village Extensions.*—These studies illustrate how the integration of new and existing buildings maintains the character of villages and avoids ribbon development and isolated groups of houses.

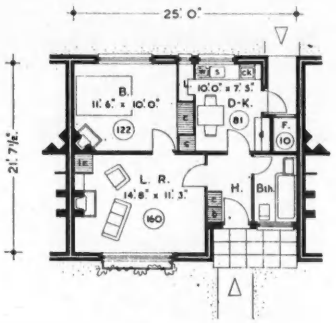
ii. *Outer Ring Development: A Study for the Layout of a New Residential Area.*—The site is assumed to form part of the residential area of a small satellite town, and adjoins the town civic and main shopping centre, industrial area and major public open space. The site has a total area of 125 acres and a net housing area (including local open space) of 99 acres. The layout is designed to provide for approximately 3,500 persons, which gives a net density of 35 habitable rooms per acre. Approximately 90 per cent. of the population would be accommodated in houses and the remainder in maisonettes and flats.

The scheme is described in detail in paragraph 45 of the Manual as follows:—

"The typical scheme of development shown illustrates the possibilities of a mixed form of development in outer ring areas. It has been designed to illustrate three-dimensional grouping in a housing area having a net density of 35 habitable rooms per acre. The terrace houses are planned in compact groups; a few semi-detached houses are shown, but most are in terraces, varying in length from six to 12 and more houses, set around large greens and open spaces of different sizes and shapes. Dwellings for old people are also included. The blocks of flats are sited in different parts of the residential area and adjoin the shopping centre and open spaces. Sited in this way, their difference in

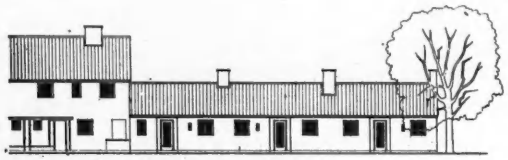
OLD PEOPLE'S DWELLINGS

ELEVATION TO THE ROAD



Two person. **South aspect**
Floor area 541 sq. ft.
including inset porches of
45 sq. ft.

Plan where the bedroom is entered from the living room.



ELEVATION TO THE ROAD

Old people's dwellings at the end of a terrace of two-storey houses.

FIG. 46

Two person. **North aspect**
Floor area 456 sq. ft.
including inset porches of
28 sq. ft.

Plan where a bed recess is arranged off the living room.

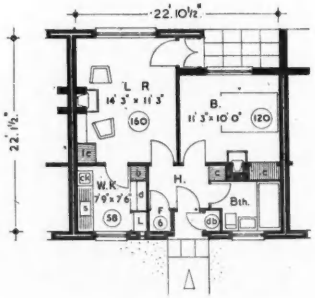
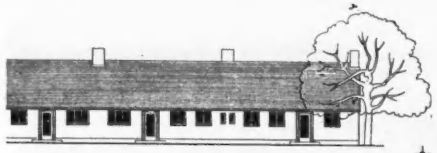


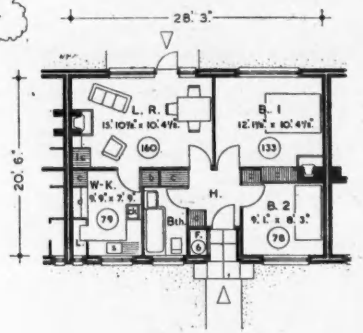
FIG. 47

Two person. **North aspect**
Floor area 506 sq. ft.
including inset porches of
36 sq. ft.

Plan where the bedroom is entered from the hall.



ELEVATION TO THE ROAD

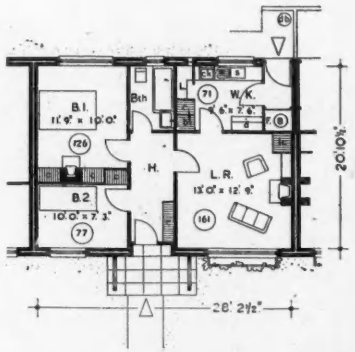


North aspect

Three person. Floor area 579 sq. ft. including inset porch.

Plan where two bedrooms are both entered from the hall.

ELEVATION TO THE ROAD



West aspect

Three person. Floor area 589 sq. ft. including inset porch 14 sq. ft.

THE HOUSING MANUAL, 1949. Type plans for old people's dwellings.

HIGH DENSITY REDEVELOPMENT. Model showing layout of 48-acre site forming part of a high density residential neighbourhood.

height and size provides contrast with the houses and adds variety and interest to the layout. The greens vary in size from ¼ acre up to 2 acres, and every house overlooks an open space or has one immediately adjoining. Inter-related groups of buildings have been planned which can be served by a satisfactory layout of minor roads in contrast with the common practice of first designing a road pattern and then lining the roads with semi-detached houses and short terraces and forming *culs-de-sac* and small greens adjacent to them. Alternative ways of treating road junctions, quadrangles, closes and hollow squares are shown. Various methods are indicated of developing the land alongside a principal traffic route where no service road is permitted."

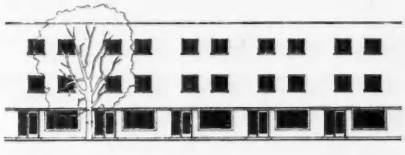
iii. *A Redevelopment Area.*—This study of layout shows a 48-acre size site forming part of a high density residential neighbourhood. The development comprises three-storey terrace houses and eight-storey blocks in a proportion that provides approximately two-thirds of the total of habitable rooms in family houses and the balance in flats and maisonettes. Some of the three-storey terrace blocks could be planned as maisonettes and flats. The net density is approximately 100 habitable rooms per acre, including about 1 acre of local open space per 1,000 persons in the form of town squares. Approximately 4,800 habitable rooms are provided. The layout shows how an urban character can be achieved by skilful grouping of dwellings in which (a) the town square is reintroduced as a feature, (b) the existing street network is remodelled, (c) contrast is achieved by varying the grouping of buildings in plan and in height, and (d) terrace houses with gardens are provided for the larger families with children and maisonettes and flats for the smaller families.

Roads. A new schedule of proposed minimum widths of streets is included and it is hoped that the reduced widths recommended for some types of street will lead to economies and the improvement in the appearance of estates. The schedule has been drawn up by the Ministries of Town and Country Planning, Transport and Health with the object of promoting a uniform code of good practice throughout the country. The schedule is being studied by the associations of local authorities and is therefore included in the Manual subject to any amendments in detail they may propose.

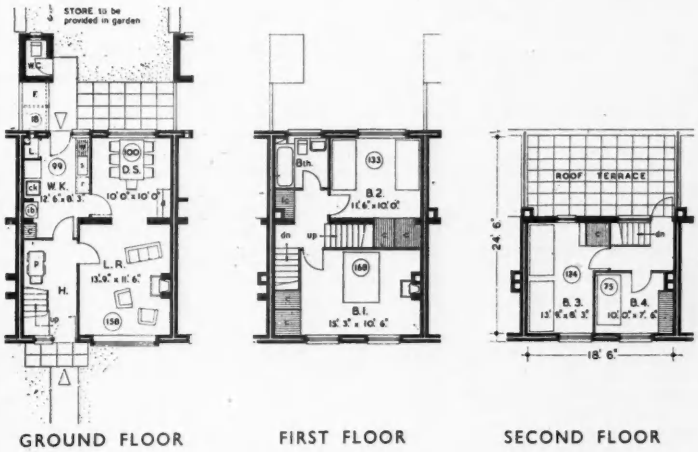
Local authorities are urged yet again to employ the services of architects, not merely for their housing work but so that they are made responsible for layouts at the inception of schemes.

The Minister is very anxious that the new Manual should not be followed slavishly in the manner of a statutory handbook with emphasis on the letter rather than the spirit. He is aware that there is a real danger of a tiresome similarity appearing in every county unless architects advance the idea of assimilating regional characteristics in contemporary work.

The Manual has been prepared with the help of a Sub-Committee of the Minister's Central Housing Advisory Committee and this committee is now considering "what further advice may be given to local authorities on the erection of houses of different types and sizes."



ELEVATION TO THE ROAD



GROUND FLOOR FIRST FLOOR SECOND FLOOR

THREE-STOREY TERRACE HOUSE **East or West aspect**

Seven person. Floor area: House 1,161 sq. ft.; outbuildings 32 sq. ft.

PLANS OF THREE-STOREY TERRACE HOUSE. The elevation of each house is repeated as the unit of design. The living rooms are on the ground floor and main bedrooms and bathroom on the first floor. A double and a single bedroom and a sun terrace are on the second floor. (See centre foreground of model illustrated above.)

View of two pairs of semi-detached houses.

A NON-TRADITIONAL HOUSE ON THE "REEMA" SYSTEM

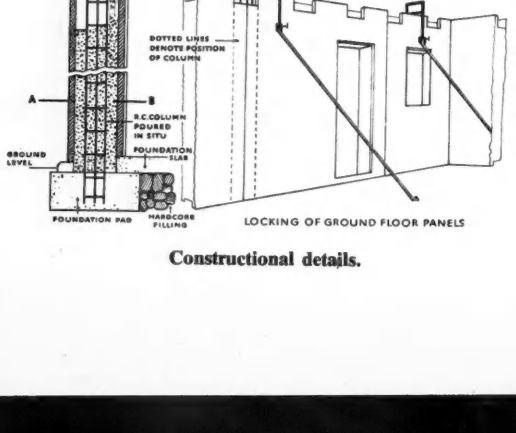
WALLACE F. SMITH, A.R.I.B.A., ARCHITECT. W. E. REED, M.I.C.E., CIVIL ENGINEER

THE "Reema" house is of non-traditional design and is constructed of precast concrete units, the main advantages claimed being (1) a saving of skilled labour in erection, and (2) flexibility in design. A total of 40 wall panels are required to build a pair of houses, the shell of which, it is estimated, can be erected in four days. Panels, complete with windows and door apertures, are transported from storage racks at the factory to the building site. They are placed in position and held by adjustable steel ties and clamps, before the pouring of reinforced concrete columns at the panel joints. These columns not only lock together the wall panels, but also serve to transfer to the foundations the loads from the upper floors and roof.

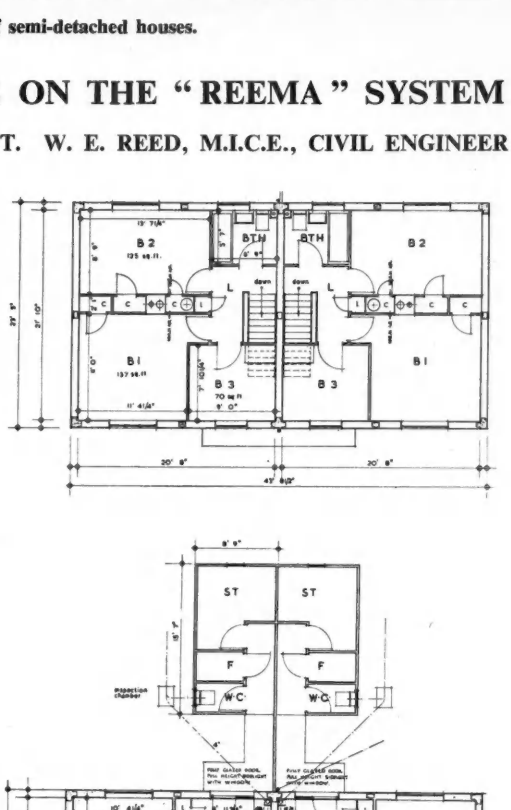
The floor joists, also of precast concrete, fit into slots provided at the top of the wall panels. The system of construction is designed to allow several variations in elevation and roof design.

The flooring at ground-floor level in the "Reema" house is of $\frac{5}{8}$-in. pitchmastic laid on a 4-in. concrete floor slab over a 4-in. bed of hardcore. Flooring at first-floor level is of 1-in. timber. Windows are standard metal casements, and cills are of quarry tiles. Internal partition walls are of 4-in. concrete, and a $\frac{1}{2}$-in. fibreboard lining is applied to the external wall panels, an operation carried out as part of the manufacturing process.

The Reema Construction Company point out that this system of construction can also be adapted for factories, hospitals, administrative buildings and public houses.



Constructional details.



Plans of pair of houses, each 902 sq. ft. net.

CORRESPONDENCE

Effects of Cuts on Building

TO THE EDITOR OF *The Builder*.

SIR,—Your readers will appreciate the promptitude with which you have tackled in your leading article of October 28 some of the fallacies in the Government's plans to cut national expenditure in so far as such plans affect the building industry. There are so many valid criticisms which can be made of these proposals that you will not, I feel sure, take amiss my calling attention to some you have omitted.

The tasks imposed upon the Government both by the economic situation and by informed opinion was three-fold; firstly, to reduce the expenditure of public money, thereby making it possible to lighten the burden of taxation and rates and thus provide additional incentives; secondly, to offset existing inflationary tendencies and mop up any increased spending power resulting from reduced taxation by suitable measures; and thirdly, to create conditions whereby the home consumption of exportable goods should be cut to the minimum.

The Government's proposals in the building field fail to satisfy any of these criteria. In housing the cut is primarily at the expense of private individuals and not of public expenditure. There is not, therefore, under this head to be any material relief for the Exchequer which would enable taxation to be lightened; and, as you yourself have pointed out, houses to be put in hand in future will be completed at maximum cost. A possible diversion of spending power from consumer goods has also been ignored. Moreover, the lowering of the "free limit"—which, we learn from the Chancellor of the Exchequer, is to take place—is equally ill-conceived. At the moment any citizen can, if he needs or wishes, spend up to £100 per annum on the repair or redecoration of his house. If he is no longer to be able to do this legally there is, firstly, the risk of a revival of the "black market" and, secondly, the certainty that the saving forced on him will not be so large that he will feel bound to bank it or invest it in National Savings. He will merely conclude that he has more elbow room for expenditure in other directions. In both cases the Government's disinflationary intention is defeated.

Finally, with the exception of timber and certain non-ferrous metals, building materials are not imported, nor do they bulk very large in the export market. There seems, therefore, little object in curtailing the citizen's expenditure on them and still less when it is possible that the diverted spending power may create an increased consumption of other articles which could have been exported.

D. C. MALLAM.

London, W.C.2.

TO THE EDITOR OF *The Builder*.

SIR,—In common, no doubt, with others, I have been trying to work out the consequence of the cuts in building. Presumably they are being made to release workers and materials for the export industries. This will involve for large numbers of people a change of occupation, special training, and probably removal to other parts of the country. Do the organisation and the housing accommodation for all this exist? The intention may also be to expand our dollar markets for building materials and equipment. Do these markets exist in view of the fact that most countries supply their own needs?

Two points, therefore, need to be clarified:—

(1) Are the workers displaced by the cuts in building to be trained for the export industries? Is this feasible and, if so, what arrangements have been made for training, housing accommodation, etc?

(2) If the intention is to increase exports of building materials, equipment, components, etc., to dollar areas, do the markets really exist and, if so, where are they?

Unless satisfactory answers can be given to these questions it seems only too clear that the cuts will only create unemployment in the building industry, and therefore are economically bad. They could even mean a "go slower" movement if we judge from Mr. R. Coppock's remark made recently that workers cannot be expected to "work themselves out of work."

HARIBONA.

Planning for Daylight

TO THE EDITOR OF *The Builder*.

SIR,—The article on the above in your issue of October 21 does nothing to modify or explain away a vitally important statement in the officially approved article in the Journal R.I.B.A. of August 1947 (Vol. 54. No. 11). This article is specifically cited in the Ministry book on the Redevelopment of Central Areas as the authorised description of the new official method of measuring permissible obstruction by means of height indicators. The statement (p. 496) is as follows:—

> "An office which has only one window would therefore have less daylight than might be expected from this study, but it seems likely that in most cases where deeply penetrating daylight is most valuable the room will be large enough to require several windows."

The windows specified are 10 ft. by 10 ft., and three feet apart. It follows that all central urban offices of a lesser width than would require more than one such window would have less than the required amount of daylight, and the official height indicators would therefore tend to legalise degrees of obstruction which it is their object to forbid.

For this reason alone, they will necessarily have to be withdrawn and corrected. Doubtless that opportunity will be taken for making them applicable to some restriction of permissible obstruction between the over-severe criterion of the equivalent of 35 deg. of vertical obstruction and the over-lenient measure of 56 deg. specified for the whole of the City of London in a Report which, according to the daily Press, was warmly approved by the Ministry.

PERCY J. WALDRAM.

113, Whitchurch-gardens,
Edgware, Middlesex.

*** This letter was written by Mr. Waldram a few days before his death, which is reported in the adjoining column.—ED.

M.O.H. at Building Exhibition

The exhibit of the Ministry of Health is based upon the recommendations set out in the recently published Housing Manual, 1949, particular emphasis being laid upon house planning, house design, layout and grouping. Plans are exhibited of recommended designs for both large and small families in town and country and also of specially designed dwellings for old couples and single persons. Some of these designs are illustrated in this issue on pages 453-455.

OBITUARY

T. Harold Hughes, F.R.I.B.A., F.R.I.C.S.

WE record with deep regret the death of Mr. T. Harold Hughes, F.R.I.B.A., of Grays Inn-square, London, which took place in Edinburgh on November 9. He was 62, and had won a deservedly high reputation in the extension and restoration of old buildings. His most recent work was at Exeter College, Oxford, where he had reconstructed the Rector's Lodging and had built a new staircase inside Palmer's Tower.

Born in 1887, he studied at the Royal College of Art and was later an assistant in Sir Ernest George's office, afterwards being in partnership with Sir John Burnet. Later he became Director of the Glasgow School of Architecture, and was consulting architect at Glasgow Cathedral. He won a travelling scholarship at the R.C.A., and was R.I.B.A. Essay Medallist in 1912. His work included two war memorials won in competition—Hull cenotaph and Hamilton war memorial. He designed extensions to St. Piran's School, Maidenhead, restored Wheatley Manor, Oxon., and, as surveyor to Merton College, Oxford, remodelled the Butterfield building. He also designed the new buildings for Corpus Christi College overlooking Merton-grove. In both these works he was assisted by the late Herbert Filmer. He published several books, including "Towns and Town Planning," written with Mr. Lamborn. He was A.R.C.A., F.R.G.S. and F.R.I.C.S.

George Drysdale, F.R.I.B.A.

THE death in Birmingham is announced of Mr. George Drysdale, F.R.I.B.A., at the age of 68. Mr. Drysdale, who was in partnership with Mr. Arthur Ledoyen at Edgbaston, had had a distinguished career as a student, winning the Pugin studentship in 1906, the Soane medallion in 1908 and the Tite prize in the same year. He was elected A.R.I.B.A. in 1911 and Fellow 12 years later. In 1916 he went to Canada, and spent the next three years working on the plans for the new Houses of Parliament, Ottawa. Two examples of his work in Birmingham are St. Hubert's Church on the Birmingham-Wolverhampton trunk road and the Church of the Holy Family on the Coventry-road. Mr. Drysdale was to have received on November 22 the Birmingham Civic Society's gold medal.

Percy John Waldram, F.R.I.C.S.

THE death took place on November 8 of Mr. P. J. Waldram, F.R.I.C.S., a pioneer and authority on daylighting of buildings. He was 80. Mr. Waldram was a frequent contributor to the columns of *The Builder*, and a letter from him, written shortly before his death, appears in our Correspondence columns this week.

Percy John Waldram, was born on April 27, 1869. He was the eldest surviving son of John Waldram, civil engineer, the founder of the firm of John Waldram and Son. P. J. Waldram succeeded to his father's practice, after a period spent as assistant to Mr. E. V. Olander. He had a considerable experience in civil engineering and architectural work: in his earlier days he was responsible for the design of many railway bridges, and, in collaboration, for the Pavilion of Herne Bay Pier, erected in 1913. He lectured on structural mechanics, and his book, "The Principles of Structural Mechanics," a textbook for architectural students published in 1912, has recently seen its third edition. In 1915 "Structural Design in Steel Frame Buildings" appeared.

He served in the Artists' Rifles as a young man, but was too old for military

service in 1914: during the war he was engaged for part of the time upon the design and structural testing of aircraft, with the Aircraft Manufacturing Co., and later, with the Steel Wing Co., he designed one of the first steel aircraft wings.

Mr. Waldram was best known, both in this country and abroad, as a pioneer and a leading authority on daylight and sunlight. He studied it from about 1910, at first in collaboration with the late A. P. Trotter and the late Professor W. Clinton, and he established the principles of daylight factor and methods of measurement of daylight which are now accepted practice. These he applied to legal work; and in 1923, in collaboration with his elder son, he devised methods of predetermining and calculating daylight which are recognised as standard. He was a well-known expert in "ancient light" disputes.

He was Chairman in 1933 of a Committee of the R.I.B.A. upon "The Orientation of Buildings," the report of which is a valuable record of the properties of sunlight. He wrote many papers and articles on daylight to technical journals and societies, including the International Commission on Illumination, upon all aspects of daylight and sunlight, particularly as they affect town planning. In his later years he was afflicted with arthritis, by which he was eventually almost completely crippled; nevertheless, he retained his full mental vigour, and actively pursued to the end the subject which he had made particularly his own.

He was a member of the Royal Institution; a licentiate, a former Member of Council and Examiner of the Royal Institute of British Architects; F.R.I.C.S.; and a past-chairman and vice-president of the Junior Institution of Engineers. He was an original Member and Fellow of the Illuminating Engineering Society; his son, Mr. J. M. Waldram, is the immediate past president of the Society. He leaves a widow and two sons.

A. E. Kingwell, F.R.I.B.A.

THE death took place on November 10 at Hadley Wood of Mr. Albert Edward Kingwell, F.R.I.B.A.. He studied at the Ecole de Dessin, Paris, the A.A. and at South Kensington before being articled to the late George Edwards. He began in private practice in 1887, and was principally engaged on works under the administration of the Court of Chancery and the Duchy of Lancaster. He was 86.

W. F. Jones.

IT is with regret that we announce the death of Mr. W. F. Jones, who for many years had represented art metal and casement window manufacturers.

W. J. W. writes: In his early days Jones was with the late Atkin Berry, from whom he gained much architectural knowledge, which was later to stand him in good stead. He was a genial personality, well versed in architectural matters of the day, and no mean authority on buildings. So familiar was he with the detailing of certain architects' work that he was able to, and often did, sketch details on the job for the benefit of the foreman. For many years he was London manager for George Wragge, the art metal workers, and was known among architects—many of whom counted him among their friends—as "Jones the Wragge man." In later years he represented the old-established Manchester firm of Humphries, Jackson and Ambler. His interest in and care of work entrusted to him earned him the description by the late Baillie Scott and his partner, Mr. Edgar Beresford, of "our walking clerk of works." He will be missed by many of the older school of architects.

CHARTERED SURVEYORS AND REGISTRATION

Mr. John Watson's Views

THE need for skilled professional services created by the volume of legislation affecting land and the acute scarcity of every kind of accommodation—a consideration which offered considerable scope for the charlatan—were reasons why, within the profession itself, but also in other circles, consideration was being given to the expediency of statutory registration of surveyors. This statement was made by MR. JOHN A. F. WATSON, J.P., in his presidential address to the Royal Institution of Chartered Surveyors, given at 12, Great George-street, S.W.1, on Monday last. Mr. Watson said:

"The statutory registration of the surveyor's profession is no new topic. It arises from time to time, and many of us remember the promotion of our Registration Bill in Parliament in 1923 and the circumstances in which eventually it was dropped. Members will also recall that as recently as 1944 this matter was referred by the Council to a special and representative committee. The material part of the committee's report, in which the arguments on both sides were concisely set out, was reproduced in the R.I.C.S. *Journal*. The Council adopted the committee's recommendation that it would be inadvisable to pursue a policy of registration at that time.

"The primary object of the registration of any profession must be a more effective service to the public. The safeguarding of its members' interests is only a secondary consideration. 'In general,' said the committee, 'the objects of registration are to facilitate distinction between the qualified and unqualified practitioner; to secure, as far as possible, that a profession is practised only by competent persons; to prevent practice by criminals or ex-criminals; to prohibit acts which, though legal in themselves, may be detrimental to a client's interest; to enforce rules of professional etiquette within the profession, and to raise the status of the profession in the public estimation.' These, as the committee remarked, are worthy objects. Unfortunately, it is doubtful if registration would achieve them."

The Architects Act, 1938, continued the President, provided yet another illustration of an important Parliamentary principle: namely, a reluctance to pass any legislation that might operate to deprive an honest man of his livelihood. If, therefore, registration was to be obtained at all, one must expect to find upon the register a host of practitioners, all entitled to the designation "registered surveyor," who, by the Institution's standards, were totally unqualified. At a time when the public were beginning to appreciate the implication of the word "chartered," but were obscure as to the distinction between, and the standard of competence to be expected from, "surveyors," "valuers," "appraisers," "house agents," "estate agents," "land agents" and "landed property agents," it might be thought that to create a compendious category of "registered surveyors," to include all these persons, whether qualified or not, might merely deepen the obscurity.

"There are, moreover, certain technical difficulties in the way of registering our profession, which did not exist in the case of the architect. Everyone knows what an architect is. He is a man who designs buildings. Few people would be likely to employ for this purpose a professional man who, instead of calling himself an architect, practised under some other description. Thus an architect who for misconduct has been removed from the register, suffers a grave disability. The surveyor, it is thought, would not suffer this disability—at any rate to the same extent. For even if all the seven designations I have just mentioned were registered, the unregistered practitioner would have little difficulty in devising a new one, under which he could continue in business. And many people, slow to appreciate the significance of the word 'registered,' would continue to employ him. It will be seen, therefore, that in our profession statutory registration by control of appellations is not likely to be effective.

"An alternative, or additional, method of registration is by control of function. The Act, for example, might prohibit the signing of a valuation by anyone except a registered practitioner. But here again there is difficulty, because the functions of several other professions impinge upon ours—or, as they might prefer to put it, because our functions encroach upon theirs.

"Here, then, are very real difficulties. I would not go so far as to say that they are insuperable. When, therefore, your Council were asked, as they were asked by more than one of our kindred societies, to open discussions on this question, they agreed to do so. The Institution is always willing to explore any matter of general import to the profession in conjunction with the societies with which it enjoys so happy a relationship. Although for the reasons I have given the Council are conscious of the difficulties, they have entered upon these discussions with an open mind."

Entry into Surveying.

Turning to the question of entry to the surveying profession, the President issued a warning note. It could not be too often said that the proper training of a surveyor was a long and arduous process. On the valuer depended the just application of many statutes, but there was no short cut to proficiency. If Parliament pressed ahead too fast with a further programme of legislation governing landed interests, there is a grave danger that her policies might be frustrated by a shortage of persons properly qualified to carry them into execution. The Institution's aim was to educate young entrants into the profession, and had been busy setting its own house in order. A special sub-committee of the Education Committee of the Institution had been appointed in 1947 to review educational policy. The interim report presented in 1948 stated as an aim "to secure that the candidates admitted to the corporate membership of the Institution are academically equipped to practise at least one of the branches of the surveyor's profession . . . in such a manner, morally and technically, as to further the ideals and objects of the Institution. . . ."

Mr. Watson continued: "We meant moral, of course, in the narrower sense of the word—as pertaining to the distinction between right and wrong in relation to professional behaviour. Entry to the Institution implies the acceptance of its code of conduct, and continued membership is contingent upon its observance. But we intended more than that: we employed the word 'moral' in a more general sense, as denoting human duty in its widest extent for the benefit, not of the individual, but of the community. It is that kind of morality which, in my humble opinion, to-day more than ever needs to be practised by the young people of this country—especially by those entering the professions."

BUILDING IN THE U.S.A.

WE refer in a leading article this week to a remarkable new book on "American Building: The Forces that Shape It," by James Marston Fitch, technical editor of *The Architectural Forum*. As a synthesis of the major trends in American building during the past 300-odd years, and an outline of possible future developments, it is a work of considerable importance and interest to all working in the field of building. The following extracts give an indication of the range of its subject matter and the stimulating quality of its style.

. . .

Form must spring not from preconceptions, but from the limitations of actual material and process; form must be conditioned by the need for efficient performance in the finished product.

. . .

Occasionally under the accumulating pressure of social change, a structure appears in which all three factors [theory, material, technique] have combined at a high level to produce a radically new type. To borrow a term from the anthropologists, there has been a *leap* forward. Such structures were the [Crystal] Palace, the [Brooklyn] Bridge, and the [Eiffel] Tower.

. . .

Each of these structures was, in a way, the product of a golden moment of equilibrium, brief in time, special in character, delicate in balance. Their significance was dissipated before men of adequate stature could again appear to grasp it.

. . .

"Form follows function" (Louis Sullivan's famous axiom).

. . .

In the truest sense of the word, the architect has never been literate; to him a picture is worth a thousand words, and since the introduction of photography, ten thousand.

. . .

H. H. Richardson's work in the East had already achieved the high praise of imitation when he came to Chicago to build the famous store for Marshall Field. It created an immediate sensation. But the thing about the Field Building which Louis Sullivan was quick to appreciate was not so much the majestic scale of arched bays and rusticated stonework as the simplicity and clarity of its organisation.

. . .

Sullivan invented neither the steel frame nor the multi-storied building; but in 1891, in the Wainwright Building in St. Louis, he produced the prototype which, in plan and façade, was not to be materially improved upon for half a century.

. . .

Frank Lloyd Wright's influence upon American building design has been immense, incalculable; for that reason it is also hard to assess. In his buildings it has been generally progressive. The whole average level of our architecture, especially our domestic architecture, is incomparably higher than it would have been had Wright not lived.

. . .

Broad, blind gables; towering chimneys topped by sculptured pots; immense, steeply sloping tiled roofs—no literate person could look at these without conjuring up a whole romantic literature of English country life. Wright's houses had no such dependence on the past. Where allusion did occur it was oblique, abstracted. Here and there one might catch a fleeting colour from the American Indians, a glint of burnished copper and polished wood from some Quaker kitchen, a shingled eave which evanescently recalled the frontier cabins of Audubon and Daniel Boone.

. . .

If Frank Lloyd Wright succeeded where Sullivan could not, one is almost inclined to put it down to Wright's extraordinary tenacity—and nothing else. His accomplishment, as he himself put it in later years, was in merely staying alive.

Sullivan wrote of the mass perversion of public taste; Wright has dwelt at length on the effect of boyhood summers on his grandfather's farm upon his concepts of beauty. One sought to be a democrat, the other was a humanist.

Part of Wright's immense vogue with the younger section of the profession springs from misconception of his radicalism. He was and has remained a sort of anarchist.

. . .

The Classicists had the tacit support of most architectural advertising, of the real estate and mortgage interests, of public taste itself. Their most dangerous secret weapon was the Rockefeller restoration of Colonial Williamsburg. Whatever the intentions of its founders, this project has done more to stultify and corrupt American taste than any single event in our history, the Columbian Exposition possibly excepted.

. . .

The cold and ruthless order of Imperial Rome was the symbol of Wall-street as the century closed.

. . .

Whatever its low points of urban and rural slum, the *average* technological level of American building is probably the highest in the world. And this is largely due to the participation of the public—the building consumers themselves—in the demand for better buildings. Significantly enough, this demand has nearly always been expressed in terms of "health and safety."

. . .

It is no more possible for an architect to design a satisfactory building by traditional methods—a knowledge of Vignola and Williamsburg, a "feeling for materials," and a couple of handbooks on plumbing and heating—than it would be possible for the local tinsmith to design a modern plane.

. . .

Hundreds of thousands of fires rage in this country every year, usually in buildings which are structurally as inflammable as their contents. In 1945 some 11,000 persons lost their lives in these fires, many others were injured: property losses ran to $500,000,000 for the year. It is probable that no more than 10 per cent. of all American buildings reach even minimum levels of fire-safeness.

. . .

Wood has always been America's favourite building material. It still is. In 1940, 87 per cent. of all dwelling units in the nation were built of wood. But this quantitative ascendancy can be deceptive: almost from their first appearance steel and ferro-concrete displaced wood as a qualitatively important structural material.

We have never had a genuine masonry tradition in this country; even in its heyday, the masonry building relied upon steel or wood for framing its roof and floor.

. . .

A room which provides optimum control of heat, atmosphere, light, sound, and human movement will normally tend to become curvilinear in plan and section. It will remain rectilinear only with difficulty.

. . .

The curves of continuity structures must be determined by stress patterns, not literary intuition.

. . .

Suspended structures have offered the building designer an especially fertile field for speculation, though few have so far been actually built.

. . .

The great majority of American building is, unhappily, not structurally very advanced: much of it is not even structurally very sound.

. . .

Irrespective of all the technical, political and economic obstacles which to-day obscure the peaceful applications of atomic energy, it is apparent that fantastic changes in our concepts of the thermal environment are inevitable. The centralised heating and cooking of entire cities will become a necessity. Here we will heat and cool not merely their buildings, but their streets, parks, playgrounds, and airfields as well. Indeed, the manipulation of the climates of whole regions will become a commonplace.

. . .

Well over a third of all American farm homes are without electricity to-day—being lit, presumably, by oil lamps, candles or open fires.

. . .

Several of the new studios of the Columbia Broadcasting System in New York have brilliantly solved this problem of multiple [acoustic] use with movable walls. Here the walls consist of horizontal louvres which are electrically operated. The fins are surfaced in a variety of reflective and absorbent materials and, at the press of a button, can be adjusted to any desired degree.

. . .

Twenty-two per cent. of our dwellings (in 1940) had no electric power, 66 per cent. had no mechanical refrigeration, 58 per cent. had no central heating.

. . .

Trees, shrubs, sod, and ground cover must be viewed not as luxuries, not as ornaments, but as actual items of equipment, as essential to the efficient operation of the building as its stoker or lighting system.

. . .

When we succeed in duplicating the physio-chemical process by which the simplest weed can convert and store energy in usable form, a Gordian knot in building design will have been cut. This is a task for the physicist and chemist; and the solution is not one for which society can long wait. Once solved, there is the dazzling possibility that any building in a temperate climate could be heated, and possibly even cooled, by the sunlight which falls upon its surfaces.

. . .

A symmetrical plan is seldom an accurate reflection of the social processes it is supposed to facilitate; an axis is a concept from plane geometry, not biology.

. . .

The factory is the crucial building in our society. It is the factory which at

once makes possible and necessary all the rich variety of modern American building.

. . .

The multiple use and flexible organisation of space are at the contemporary scale inconceivable without a high degree of building mechanisation. . . . Motor-operated walls, floors, seating and partitions rise, drop, tilt, or fold at the touch of a button. Lighting systems can be made to pin-point a soprano or flood a hockey game. Air-conditioning systems automatically adjust themselves to a cheering crowd of thousands or a sedate group at a lecture.

. . .

The production of buildings is one of the most complex and difficult of all operations in present-day America. To assemble the money, land, labour, materials and equipment necessary to the production of even a small five-room house is a process which is proportionately more involved than that of building a 45,000-ton battleship.

. . .

At its highest peak of production, in 1929, the housing sector produced only some 900,000 new units; it has never approached that point since; in 1946, with a need of perhaps as many as 5,750,000 dwelling units, it produced a scant 500,000. And these left much to be desired in both quality and price.

Embodying many of the best qualities of French culture—its precision, scholarship, wit and elegance—Le Corbusier's designs at the same time have a certain emotional aridity. His concepts are exquisitely worked out; but they tend to be repetitious.

. . .

It is apparent that above and beyond physical performance, laymen ask something more of buildings, some quality which they have found in the traditional design and miss in the modern one. What is this quality? The quality, it seems to me, is sentiment.

. . .

In view of the anarchy and general backwardness of the building field, it is hardly surprising that the vast majority of our building stands at an appallingly low level, technically and æsthetically.

. . .

Judged relative to those currently operative æsthetic standards in the modern movement, most of our building seems poor.

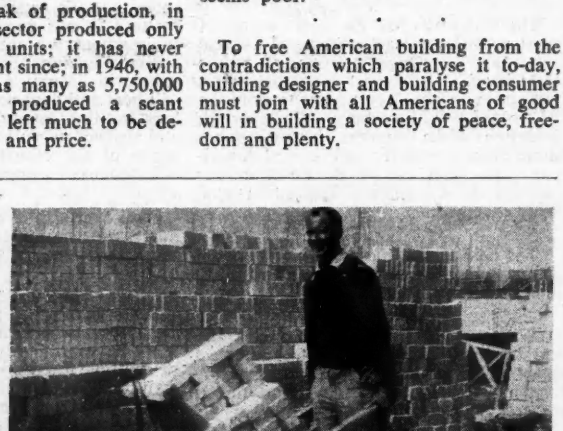
. . .

To free American building from the contradictions which paralyse it to-day, building designer and building consumer must join with all Americans of good will in building a society of peace, freedom and plenty.

INCENTIVES SCHEME IN HOLLAND

The Use of Method Studies as a Basis

(From a Correspondent)



LAST May your correspondent was sent to Holland to learn how method studies are being used in planning the basis for a national incentives scheme in the Dutch building industry.

Such studies have been going on for over two and a half years under the direction of *Ratiobouw*—in effect, a department sponsored by the State for conducting and co-ordinating research on the economics of building and for seeing that the industry is kept informed of progress and results promising benefit.

After the war the pressure for housing and building generally crushed the labour supply and caused famine in materials. Brakes were applied, output steadied and is now rising evenly. In May, output was about 10 per cent. below pre-war, and was adding some 40,000 dwelling units a year. In Holland, housing schemes tend to four-storey blocks of flats rather than two-storey semi-detached villas. With a rising building rate there has been a fall in the price of house property.

There is a desire to encourage physical effort, and thereby raise output per man-hour, by rewarding it on a basis which is verifiable and which is also easily recognisable as just by all and sundry. *Ratiobouw* favours method studies as meeting these requirements, but for some of the "all and sundry" bargaining still has its attractions. However, if stop-watches and cine-cameras are inhuman instruments of precision, they are at least impartial and the obvious care and sincerity of field observers gain ground for confidence in their work and its results.

Present Incentives.

Incentives (*tarieven*), based on rates arrived at by bargaining between individual employers and their men, have been familiar in the Dutch building industry for many years. From such particular cases collective agreements have evolved, like that for the bricklayers of Amsterdam in 1908. Two years later a national wage agreement was legalised for plasterers in which a bonus was payable with a ceiling of 40 per cent. above basic wages. There has also been a sub-contract (labour only) form of agreement, as in England, covering higher wages for specialised teams working as sub-contractors.

Now, a College of Mediators, appointed by the Ministry of Social Affairs, supervises existing and proposed wage agreements, thus tending to give national extension to incentive systems. The Mediators are directly interested in the use of method studies as an effective feature in designing an incentive system.

Pending the introduction of a closely designed scheme based on method study principles, operatives are paid at a basic rate per hour; "wet time" is paid for, officially at 80 per cent., but in practice many employers pay the full rate provided the man is available for work. "Frozen time" is paid at a rate slightly less than the full amount, but the men go home. The contractor specifies and lists the measurable items of the work, and enters for each the proposed target or expected performance above which he proposes to pay bonus. His list constitutes the *tarief* and he agrees it with a local trade council drawn from labour bureaux, contractors and trade unions. Failing agreement, the College of Mediators is available for a decision. In practice, speedy agreement is usual. For a large undertaking contractors may engage consultant specialists to formulate a *tarief*. Bonus payments are made up to a ceiling of 25 per cent. above the normal weekly wage.

The system has disadvantages in several ways and some contractors, probably those who have established friendly personal relations with their men, have a way of short-circuiting formalities and settling matters with smiles all round.

A Proposed Incentive Scheme.

An incentive scheme relying on method studies is taking shape and is the subject of negotiation between the parties. The general principles of the scheme will probably be like those now relied upon, i.e., basic wage plus bonus, but the bonus part will result from scientific field measurements rather than from bargaining. The bonus will probably vary with the type and quality of work involved. The bonus will be based upon a speed equivalent to an agreed 60 rating, and the workers may be paid a little more than the full value of the time saving due to a speed of working above this rating. This payment would be on a sliding scale and provide that a 72 rating would be paid as for 75. Measurable work will probably be paid on a 90 c. per hour basis, and non-measurable work at 94 c. per hour.

Tarieven will be issued as the schemes for various trades are worked out and approved. Figures will be collected from works where the system is used and will be digested on record sheets to watch bonus earnings.

The problem of unproductive time is being closely studied. One suggestion is that the standard time for a piece of work should be increased by 30 to 35 per cent., depending on the job, to cover this factor. Data, extending over a wide range of work, are being collected to provide a reliable basis for this percentage.

The impression left on your correspondent after a ten-day visit was that the Dutch are tackling the problem of incentives in a state of full employment in the Dutch way — methodically, fairly and good naturedly. Without exception, every official he met was at pains to give all the information required.

INCENTIVES SCHEMES UNDER DISCUSSION

Debate at L.M.B.A. Area Meeting

AFTER concluding its ordinary business, the monthly meeting of Central Area No. 1, which was held at Kensington on November 9, proceeded to discuss the question of incentives schemes. MR. L. J. HOLLOWAY, who was in the chair, suggested that the point under consideration was whether or not incentives were to form part and parcel of the rest of their working lives. If so, what form were they to take? If not, what alternatives had they to offer?

MR. D. E. WOODBINE PARISH (Holliday and Greenwood, Ltd.) said that three alternatives had been put to the membership. With great respect, he suggested that there was only one point before them that day and not three: how they were going to make incentives operate? The answer to the question as to what would happen if they did not have incentives was complete national disaster and bankruptcy so far as the building industry was concerned. The solution of this grave and complex problem lay in finding practicable and equitable schemes, and any members who thought otherwise and would not co-operate would not survive.

MR. GORDON LILLY (Walter Lilly and Co., Ltd.) drew attention to what he considered to be one important aspect of the matter. That was the Communist inspiration behind the new wage claim for an extra sixpence an hour. Anyone who read the *Daily Worker* would realise that this claim represented not only the policy of the Communist Party but also the feelings of many of the operatives in the building industry, and their attitude towards it was that this extra sixpence an hour (which would come to from £1 to £1 2s. a week) could easily be afforded by the building industry out of its present profits. He personally felt that there was a deep spiritual meaning to incentives in that, unless the person concerned had the proper spiritual approach to his job, the incentive did not mean much to him. If he received, say, 2s. 6d. for the week after getting £2 the previous week, there would be difficulty if the spiritual side did not operate. His personal opinion was that the spiritual revival of the country was being greatly hampered by the pernicious propaganda of the extreme Left Wing to the effect that the building industry could afford another sixpence an hour from its present profits. They, as builders, knew this was not so, and that they could not afford to pay this fantastic increase without putting up their costs.

"Bribing Men to Work."

MR. ALAN CHARLES, who said that he spoke as a fairly small builder, stated that his difficulty was how to pay an incentive bonus which would be fair to all his operatives. The only yardstick that he could employ was whether a man was a craftsman who could be relied upon to do a good job without close supervision. Such a man was worth from 2d. up to even 6d. an hour more than the average employee who, merely because he was a member of a trade union, could automatically claim the standard minimum rate. They were paying the same rate of wages to men of widely differing ability, but how was he going to differentiate between his workmen? He could not pick out individuals and give them an extra sixpence because, apart from other difficulties, he would be up against the trade unions and the local authorities. Would anything be gained by giving incentives? It seemed that they could not get men to work nowadays unless they bribed them to do so. Mr. Charles concluded by asking how they would cost their jobs to provide for incentives, and whether the local authorities for whom they worked would be prepared to reimburse them upon that basis.

MR. A. A. THORNE (J. Styles and Son, Ltd.) said that he had been very interested in the incentives discussions ever since they started. He had always believed that the labourer was worthy of his hire. His business dealt in the smaller type of contract, and he was absolutely against anything in the nature of piecework, which was unsuitable for a firm engaged in maintenance work, renovations, and good-class decorating. If his customers knew that a builder was running a "bargain basement," he would lose his business. In a firm such as his, where there were no vast contracts supervised by many grades of foremen, good results were dependent on mutual goodwill and intelligent co-operation between the employer and his men. He was against any bonus and the fixing of a target, because he foresaw that there would be endless wrangling among the men over the result, with the employer spending most of his time settling their disputes. There must be a basis of trust, and he had accordingly instituted a profit-sharing scheme, based upon the figures of the previous year. Seven or eight operatives, representing various trades, constituted a highly successful committee which got things done. Before the war, most employers, either consciously or unconsciously, ran their businesses largely by wielding the big stick, but those days had gone for ever. He had found that his profit-sharing scheme had, in many respects, replaced the big-stick method, and it enabled him to gain the confidence of the men in a way that was not previously possible. Time-keeping had been improved and the wastage of materials reduced.

MR. F. PARKER (F. Parker of Kensington, Ltd.) inquired whether the National Federation were prepared to consider incentives in relation to profit sharing. A year ago it seemed that many members were opposed to any schemes based on profit sharing.

MR. L. H. TALBOT (J. Jarvis and Sons, Ltd.) said that the discussion had followed the lines he expected. There were only two aspects: straight contracting, and maintenance work. He sympathised with the difficulty of maintenance builders in trying to devise an incentives scheme for their smaller jobs. For the maintenance builder with a fairly stable set of workmen, profit sharing might be the answer to his problem. The case of the big contractor, whose men moved from one job to another, was different, and that was where incentives came in. They were necessary because the whole of the operatives' working rights had been concerned with incentives in some form or other. His firm had used incentives very successfully on straight contracting. He did not say that this would cheapen the job in the long run, but preliminaries would be cut down and the length of the contract perhaps reduced. Incentives of the kind that had been used during the last year or so had come to stay, whether they liked it or not. Even if they increased wages by sixpence, or even by a shilling, an hour, they would still be in the same boat, and firms would continue to give bonuses where a speedy completion of work was important. Many firms were, perhaps, giving incentives in a manner that was not originally intended under the Working Rule Agreement. Some of the men employed on the smaller jobs by maintenance builders were prepared to do an honest day's work even without incentives, and some of their work was not suitable for bonusing by calculation. If, however, they were fairly treated they would always be anxious to return to a former employer when he had work for them.

Profit-sharing on Maintenance.

MR. W. H. LUGG (W. H. Lugg and Co.) said that the question of incentives and bonusing affected not only the building trade but every industry in the country. That being so, there must be some fundamental cause underlying the troubles with which the country was affected at the present time, and he thought it could be put in two words: income tax. If they gave a man a bonus of, say, £1 10s. for the week, they deducted 10s. from it as tax, and he felt that this was one cause of their troubles with labour. The finest incentive of which he could think would be to take a shilling off income tax, but so long as the Government continued to squander money at the present rate, these labour troubles would exist. So far as incentives were concerned, the trouble was to devise a scheme that would retain the bonus principle and suit both general and maintenance contractors, and contractors who were principally engaged on new work. He agreed that a scheme based on profit sharing was best for the small maintenance contractor.

MR. TALBOT said that, from an examination of his wage sheets, he found that income tax under P.A.Y.E. accounted for not more than 7½ per cent. of the wages paid. Members submitted an annual wages return to the L.M.B.A. for subscription purposes, and he suggested the possibility of their enlightening the Association at the same time as to the amount of income tax that had been paid on the wages reported.

MR. THORNE thought that the small proportion of income tax paid by the operatives had little to do with the matter. One heard about the few shillings that a workman paid in tax, but he received compensation in things such as family allowances and tool money. It would be a good thing if the burden of taxation could be brought home to employees, so that they could see matters in the same perspective as their employers. In any case, P.A.Y.E. had come to stay. A good point about profit-sharing schemes was that the cost to the employer was not proportionately large.

Labour Cost Control.

MR. WOODBINE PARISH also expressed disagreement with Mr. Lugg. He had sat on both the National Federation Sub-Committees which discussed the evidence received from the Regions on incentives, and they had heard all the arguments which had been advanced that day. The result of that inquiry had one permanent feature—that they now had a new technique with regard to relating wages to the amount of work done. In the past they bought time but not output; but the introduction of incentives meant that they now bought output instead of time. That was a fundamental change in relation to wages. He wondered how many people in that room had really read the National Federation's publication "Application of Incentive Payments to Building Work," and whether those who had done

so and could not fully understand it had sought an explanation for the parts they did not understand. A vast amount of energy and ingenuity had gone into the production of that document. It was not lengthy, but it was packed with information and ideas that should start even the dullest brain thinking. If an employer had not the time to study it himself, he should get his staff to do so for him. To ignore it meant that the employer concerned was not playing his part in making incentives in industry a successful idea. Anyone who was able to prepare an estimate, whether maintenance or otherwise, had to assess the materials and labour required, and on-costs, and this gave a basis for the consideration of incentives. The building industry was backward in its knowledge of cost control. Other industries had realised the need for labour cost control, and the building industry should do the same. They would then (and he hoped it would happen in the near future) be pestering the technical schools for courses for their staffs.

There would always be employers, said Mr. Parish, who objected to incentives. Members had formerly said that P.A.Y.E. and Holidays-with-Pay would not work, but both were now an accepted part of their daily routine. If they applied themselves to the problem, incentive bonus payments could also become a part of their normal operations. This would entail additional supervision, but that could easily be met because of the enormous benefits which would arise from increased output. The experience of members of the Anglo-American productivity team was that American workers produced the greater output because the employers had labour output control and could cost their work, and dangle the carrots in front of the donkey to urge it along. (A Voice: "We haven't got the carrots.") An incentives scheme should be completely fair, and should be known to be fair. Mr. Thorne had referred to a bonus as though it were a present to the men. He (the speaker) considered that this was a psychological error of some magnitude. A bonus should be earned and not given as a present. Incentives had inevitably increased the output per man year in the building industry, and they were going to have 25 per cent. more work from the same labour force. Competition was the lifeblood of their industry and competition was only another name for incentives. They, as employers, derived much satisfaction from obtaining work and doing it at a profit, and incentives enabled them to pass part of that satisfaction to the operatives for doing a good job economically and speedily. There was something fundamental in getting satisfaction from one's work (cheers).

MR. F. HOLLOWAY (F. D. and H. Head, Ltd.) asked for information about the attitude of the operatives towards incentives. In reply, the CHAIRMAN quoted Mr. R. Coppock, general secretary of the N.F.B.T.O., as having said that the bonus position was due for review at any time now, and if the building industry was going away from full employment, there should be no need for incentive bonus schemes, which were justified only in full employment conditions. It was not intended to let operatives work themselves out of a job because of bonus incentives. Another suggestion was that the operatives might press for "lieu" payments on non-bonused work. In this connection, said the chairman, he would like to remind them of the Chancellor of the Exchequer's statement that it was the expressly declared policy of the Government that any increase in wages must be linked with increased production.

MR. LILLY said that the object of the meeting was to pool their experience with the object of helping one another. Mr. Parish had hit the nail on the head when he referred to cost control. He himself had been able to learn quite a lot about it from his accountant, who had made a life study of the subject. Cost control would, however, be beyond the capacity of the average builder. In the early days of incentives, his firm had tried a "hit or-miss" bonus system, and paid out thousands of pounds for a measured output. In some cases, they were astonished at the men's earnings, and there was no doubt that, if given the incentive, operatives could produce a colossal output. This particular method was, however, dangerous in that the payment of perhaps several pounds a week extra to certain workmen created dissatisfaction among others and also among the office staff, especially when it was given for comparatively simple work. The solution to the problem was to have proper cost control. A profit-sharing system failed in a bad year, when it was disappointing to an operative who had worked hard to find that his share was negligible. By realising that this was an accountant's problem, they were facing up to it; but at present there were few firms who had staffs capable of studying cost control.

MR. BARRETT said that, during the War, the engineering industry received sheaves of literature on cost control, and a large part of their increased output could be attributed to the help they received from the Ministry of Supply on this subject.

The Incentive to Work.

MAJOR L. SHINGLETON said that, when he was young, a man's incentive to work hard was the knowledge that, if he did not do so, his wife and family would starve. After the first Great War, they had the experience that was now being repeated: low output, with high wages and costs. Then, the fear of unemployment eventually compelled men to work harder, wages and costs came down, and output rose. They were now in the same position as after the first Great War, but other conditions were different. They had been told that, given good conditions, a workman would produce his best. He contended that this was not so. By their present talks on incentives they were asking in effect what additional benefit they could give to their operatives in order to get a fair day's work, whereas under the old piecework system they got additional production.

MR. PARKER said that there were many anomalies and difficulties about incentive schemes, and he suggested that all schemes which had been put into operation should be reported to the appropriate committee, which should embody the result in a pamphlet for issue to the members.

MR. H. VINCENT (Leslie and Co., Ltd.) said that, in his opinion, there were two ways of looking at incentives: (a) the incentive of the stick, and (b) the incentive of a better income. The first way was the easy way provided they had the right conditions to operate it. Although an easy thing to do, it was dangerous. He thought the feeling of the meeting was that the method of the stick was not the one for which they were looking (hear, hear), and with that he strongly agreed. They must, therefore, find a scheme based on increased income. The outlook in America was that, the greater the profits of the employers, the greater the share that the unions could claim from them; and they did not care how wealthy the employers became so long as they received their share. In this country, the trade unions took an opposite view, as Mr. Deakin had publicly admitted.

Apart from incentives, continued Mr. Vincent, it was essential that there should be re-education in the trade unions with regard to taking satisfaction in the job and realising that there are not two sides to a team. How a lead was to be given, he did not know. They were all doing their best individually but, without understanding, money and incentives were only palliatives. This was an aspect of their business to which little attention had been given. He agreed with Mr. Woodbine Parish that the building industry was far behind in its knowledge of cost control. His firm did a lot at one time by means of daily measurements, but they never found a job that paid on labour. It was costly, and the foremen eventually grew tired of it and dropped it. They were groping at that time after something that might turn out to be a success. He believed that the accountants were right when they recommended the employment of cost accountants. He thought they were getting to that stage so far as major contracting work was concerned.

MR. TALBOT said that, to run an incentives scheme successfully, they must have the goodwill of the operatives. It was therefore necessary for an employer to put his cards on the table, and the men must understand the scheme. The actual control was a matter for a trained accountant.

MR. LILLY said that his accountant had written one word, which was the crux of the matter—"Mind." This meant the psychological approach of the workmen to the problem. It was essential to get a full understanding with the operatives. All the members of the firm had to trust the cost accountant, if they had one, because everything depended on him. The National Federation could help by trying, at their level, by liaison with the Operatives, to combat the existing propaganda about the sixpence an hour rise and the so-called fantastic profits of the building industry.

MR. F. J. HOLLAND (Bovis, Ltd.) said that in the coal-mining industry, despite every incentive, the labour force was dwindling because men could find an easier type of work. A workman to-day was interested not only in the money he could earn but also in the degree of effort that was necessary to obtain it. Many workmen were simply not interested in hard work. It was, for instance, very difficult to get men for night work because they found it uncongenial. The big stick was still being wielded, but it was being used not by the employers but against them, and the only way to improve matters was to have a proper bonus scheme. They paid men to come to work and then had to bribe them to work after they had got there—and that had even been admitted by a trade union official, whether cynically or otherwise. His experience was that men accustomed to jobbing work did not want to be transferred to ordinary contract work. Incentives should be based on a proper measured scheme

Incentives as Guide to Costing.

MR. N. HANNEN (Holland & Hannen and Cubitts, Ltd.) said that the feature of their discussion that day was that they had all had time to consider the matter, and they were now not all saying that they could not operate an incentives scheme but were seeking, from their different points of view, some way in which they could do so. They realised that they could not run an incentives scheme without knowing the cost of the work, and it was beneficial to know that, even

if they did not benefit by the incentives themselves. He did not think that an incentives scheme need necessarily be run by an accountant. An employer who knew anything about his business could examine his own costs, but, of course, in certain ways a cost accountant would be able to help very considerably. It was important for both employers and operatives to work as a team.

The CHAIRMAN said that, when the question of incentives was discussed in Central Area No. 1 twelve months ago, many members expressed the opinion that the only real incentive could be caused by mass unemployment. He must now congratulate them on their change of mind. No one now favoured using the big stick of unemployment. Unemployment by itself was an incentive and it would make their incentives schemes work more easily, but if it were used as a weapon in the way that it had been used between the two Great Wars, then the employers would deserve everything which came to them. Any member who sat on Conciliation Panels and Disputes Commissions knew that this subject crept in every time. There was obviously still strong resentment on the part of the operatives, and it handicapped the employers in their negotiations. Although they did not look forward to a time when unemployment would be rife, he was afraid that there was a possibility of this happening in the not distant future. He could not see the financial structure of this country lasting much longer under present conditions. Had the recent cuts announced by the Chancellor of the Exchequer amounted to a thousand million pounds, they might have stood a chance, but the extravagance of the Government prevented them from reducing income tax. Again, in view of the manner in which the manual worker was now treated, it was little use appealing to him on moral or ethical grounds. Telling him that he received housing accommodation for less than the economical rent, that his children were educated free and received school meals at a nominal cost, and that he enjoyed many other benefits, had no effect on him.

MR. J. A. PATON WALKER (National Federation) stated that during the next twelve months the building industry would have to give serious consideration to this vital question of incentives, and members would doubtless be receiving a communication on the subject from the National Federation.

Valuation and Rating Procedure in the Future—5

By NORMAN P. GREIG, B.A., Barrister-at-Law, F.I.Arb., F.R.San.I., etc.

Valuation of Dwelling-houses: A New Code of Procedure.

PART IV of the Act furnishes a code of procedure to be followed by the Valuation Officer. Section 74 provides that for valuation lists made after the passing of this Act, and in the future, the gross value of a dwelling-house is no longer to be ascertained by reference to the definition of "gross value" under Section 68 of the Rating and Valuation Act, 1925, or Section 4 of the Valuation (Metropolis) Act, 1869, but by reference to "1938 cost," as explained below. Before examining this new procedure, three definitions must be noticed:—

Dwelling-house (S. 74). "A hereditament used wholly or mainly for the purposes of a private dwelling or private dwellings, with or without any garage, outhouse, garden, yard, court, forecourt or other appurtenances."

Hypothetical 1938 *Cost of Construction* (S. 76). After consultation with the rating authority for each area, the Minister prepares a statement embodying specifications in detail of houses and buildings of such types as he thinks fit, and which also determines the sum to be taken as the 1938 cost of constructing a house or building with that specification. In preparing this statement the Minister is to take as a guide costs actually incurred by local authorities in the years 1937 and 1938 of building houses, etc., in the particular rating area or in nearly comparable rating areas. He must also take into consideration in such comparison exceptional circumstances affecting any of these areas (S. 76(3)). Any Valuation Officer or, on appeal, any Court (Tribunal) or arbitrator concerned must assume that, in arriving at the hypothetical 1938 cost of construction, the cost in 1938 in the statement was in each case as is contained in the statement and, consequently, must estimate the cost in that year of constructing a dwelling-house, etc., similar to the one with which the Valuation Officer or Tribunal is dealing. This estimated sum thus becomes the hypothetical 1938 cost of constructing the building (S.76(4)). Further details are contained in the Section as to the inclusion in the cost of garages, outhouses, paving, etc., but *not* the cost of installation of drainage, water, gas, electricity, or air-raid shelters.

A copy of this statement is to be deposited at the rating authority's office, be open to inspection, and any person can get a copy on paying for it.

Hypothetical 1938 *Site Cost* (S. 77). The Minister must, after consultation as before, prepare a further statement, (a) specifying a particular site or particular sites in or near the area, and (b) determining in relation to such the sum to be taken as the 1938 cost of providing the site, developed as respects roads, drainage, water, electricity and gas. Directions are given in the Section (by reference to sites actually used by local authorities) giving guidance to the Minister in preparing this second statement, and for the Valuation Officer or, on appeal, the Tribunal or arbitrator, to arrive at the hypothetical 1938 cost of a dwelling-house or building. The Section further provides that if the cost estimated under the circumstances mentioned in Sub-Section 4 (b) is more than £1,500 per acre, any excess over that amount is to be disregarded.

A copy of this statement is to be deposited, etc., as in the case of the previous one.

Gross Values Ascertained by Reference to 1938 Cost (S. 75).

When the 1938 costs have been decided then the gross value of the following is to be ascertained (by reference to them by rules of some complexity), viz.: (a) Post-1918 local authority or housing association dwelling-houses, including flats and maisonettes, and (b) to the extent mentioned, small post-1918 dwelling-houses which are *not* local authority or housing association houses, nor flats and maisonettes.

Post-1918 Local Authority, etc., Dwelling-houses, Flats and Maisonettes (S. 78).

The gross value of these (i.e., group (a) above), subject to the provisions of the Section, is to be five per cent. of the hypothetical 1938 cost of construction, plus five per cent. of the hypothetical 1938 site cost.

Post-1918 Local Authority, etc., Flats or Maisonettes (S. 79).

The gross value of group (b) above is to be ascertained by reference to the sum of (i) the hypothetical 1938 cost of construction of the building of which the flat, etc., forms part; and (ii) the hypothetical 1938 site cost of that building; and is to be five per cent. of that sum, or a just apportionment properly attributable to it, but subject to certain repair and amenity factors mentioned in the Section.

Other Small Post-1918 Dwelling-houses, not Flats and Maisonettes (S. 80).

The gross value of these houses (*not* local authority, etc., houses) is to be five per cent. of the hypothetical 1938 cost of construction, plus five per cent. of the value of the site on April 1, 1949, estimated on the basis (a) that all buildings have been removed, (b) that there is no impediment to the use of the site for building dwelling-houses, and (c) that any permission necessary under any statutory provision for the use of the site will be immediately forthcoming (particularly Town and Country Planning permission without development charge).

Adjustment for Adaptation for Business Purposes (S. 81).

The principle contained in Section 81 is that where any part of a dwelling-house to which the previous three Sections apply has been specially constructed for the use of a trade, business or profession, its gross value as ascertained under the above rules is to be increased by a just amount, if any, based on any extra annual value conferred upon it for the time being.

Gross Value of Other Dwelling-houses (S. 82).

Briefly, the Section says that where the gross value cannot be estimated as above, it shall be arrived at by reference to the rents for comparable dwelling-houses paid on August 31, 1939, and subject to the complications included in the Section.

Deductions from Gross Value (S. 83).

As a general rule, this Section lays it down that Section 2 (Sub-Sections (1) to (3)) of the Rating and Valuation Act, 1928, which provides increased scales of deduction in arriving at the rateable value of certain houses is to apply to the making and alteration of the first valuation lists made after the passing of the Act, and subsequent lists, as may be prescribed by Regulations made by the Minister, in like manner, as they apply to the lists in the Sub-Sections mentioned above.

Finally, the Minister can make Orders providing that in certain classes of buildings without land other than gardens, the deduction from the gross annual value, instead of being ascertained under the Second Schedule (Part I) of the Rating and Valuation Act, 1925, or the Third Schedule to the Valuation (Metropolis) Act, 1869 (which concerns revision of valuation lists in London), shall be as specified in the Order.

[NOTE:—The object of this series (previous articles appeared in *The Builder* for October 21 and 28 and November 4 and 11) is to indicate the main features of valuation for rating under the new Act, in regard particularly to dwelling-houses. There will, inevitably, be criticism from valuers and others upon many matters, e.g., the definition of "dwelling-house" in Section 74, and the complexity of many of the rules mentioned above. To anticipate these criticisms would be beyond the scope of the contributor's purpose.]

(Concluded)

PRICE BUILD-UP TO-DAY

Third Series (No. 2)

Granolithic Paving and Carborundum

By "CAIN" (V. C. ABELL)

THIS article is prefaced with a reminder that the hourly wage rates of labourers have been increased as from October 3. This recent increase is included in the cost of labour shown in the analyses. The wage rates are those ruling for Plasterers and Plasterers' Labourers in Grade "A" areas. It is usually this trade that carries out the work under review, at least for small areas and stairways.

Granolithic Paving

The weights of the dry materials have been taken as:—

½-in. granite chippings 93 lb. per cu. ft.
⅜-in. granite chippings 98 lb. per cu. ft.
Portland cement 90 lb. per cu. ft.

These weights were checked during the laying of a floor in a vehicle depot in June, 1948, as was also the reduction in volume when wet mixed. This reduction, which equals 21 per cent., does not include the further reduction which takes place when the grano is placed in position and compressed by the hand of the pavior. Assuming that this further reduction is equal to 4 per cent. of the materials when dry, then the total reduction in volume of 25 per cent. used when calculating the materials shown in the analysis for the different thicknesses is correct.

From experience it is known that for work of this nature the percentage of waste is less when laying large areas than when laying small. Waste allowances included in the analysis are 3 per cent. on large areas, a further 2½ per cent. on small areas and a further 2½ per cent. on narrow widths. From what is seen on some building sites nowadays, the latter allowance for waste is insufficient, but estimators will agree that the principle of allowing a percentage for waste is essential. The cost of timber for straight edges, tampers and to edges of screeds is not included in the analysis. Of particular interest is the formation of the labour units for the quantity of grano to be laid. In large areas the balanced unit consists of two labourers and one layer, in small areas one labourer and one layer, and in narrow widths one labourer and two layers.

Carborundum Powder

The balanced labour unit in this case is considered to be one labourer and two layers. During the progress of the work the labourer may not be fully occupied between preparing and removing the staging; this is one of those things fully appreciated on the site but not always taken into consideration when one is price building.

(To be continued)

The rates given are the net cost on site, exclusive of site supervision, establishment charges and profit. Grade "A" wage rates taken. For the method employed of arriving at the cost to the employer of employing labour see *The Builder* for November 28, 1947, or "Price Build-Up To-day" (The Publisher, *The Builder*, 4, Catherine-street, W.C.2. Price 7s. 10d. post free).

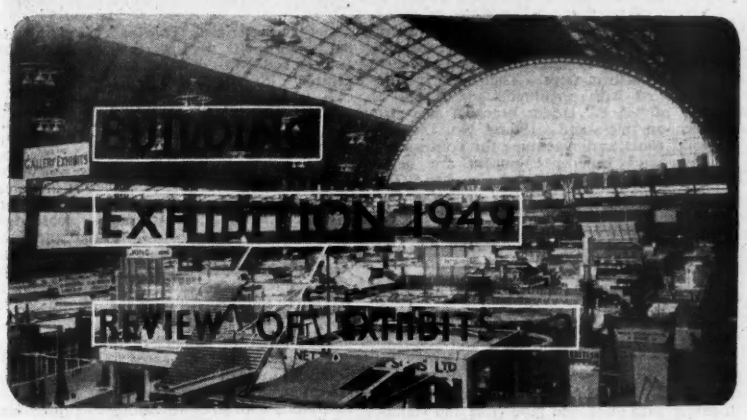
*** The first article in this series—M.A.F. Standard Farm Buildings—was given in our issue for January 28 last.—ED.

CARBORUNDUM

Description of item	Materials		Labour					Total cost			
		Cost			Cost						
In small areas	Carborundum powder	Carborundum powder at 5.75d. per lb.	Labourer	Pavior	Labourer at per hour 30.10d.	Pavior at per hour 36.38d.	Total cost of labour	Collection			
	lb.	pence	hours	hours	pence	pence	pence	pence	s.	d.	Unit
½ lb. of carborundum powder per yd. sup. of paving, trowelled in.	.5	**2.87**	.06	.12	1.80	4.36	**6.16**	9.03	**0**	**9**	**per yd. sup.**
1 lb. do.	1.0	**5.75**	.07	.14	2.10	5.09	**7.19**	12.94	**1**	**1**	,, ,, ,,
1½ lb. do.	1.5	**8.62**	.09	.17	2.70	6.18	**8.88**	17.50	**1**	**5½**	,, ,, ,,
2 lb. do.	2.0	**11.50**	.10	.20	3.01	7.27	**10.28**	21.78	**1**	**9¾**	,, ,, ,,

GRANOLITHIC PAVING, TROWELLED SMOOTH

Description of item	Materials							Labour					Total cost			
				Cost						Cost						
Gauge 3.2.2 3 of ½-in. granite chips 2 of ⅜-in. granite chips 2 of cement	½-in. granite chippings	⅜-in. granite chippings	Cement	½-in. chips at 65s. per ton	⅜-in. chips at 65s. per ton	Cement inc. paper bags at 72s. 6d. per ton	Total cost of material	Labourer	Pavior	Labourer at per hour 30.10d.	Pavior at per hour 36.38d.	Total cost of labour	Collection			
	tons	tons	tons	pence	pence	pence	pence	hours	hours	pence	pence	pence	pence	s.	d.	Unit
IN LARGE AREAS. VEHICLE DEPOT FLOORS, ETC.																
¾ in thick	.0128	.009	.0083	9.98	7.02	7.22	**24.22**	.28	.14	8.42	5.09	**13.51**	37.73	**3**	**1¾**	**per yd. sup.**
1 in. ,,	.017	.012	.011	13.26	9.36	9.57	**32.19**	.30	.15	9.03	5.45	**14.48**	46.67	**3**	**10¾**	,, ,, ,,
1½ in. ,,	.0255	.018	.0165	19.89	14.04	14.35	**48.28**	.34	.17	10.23	6.18	**16.41**	64.69	**5**	**4¾**	,, ,, ,,
2 in. ,,	.034	.024	.022	26.52	18.72	19.14	**64.38**	.40	.20	12.04	7.27	**19.31**	83.69	**6**	**11¾**	,, ,, ,,
IN SMALL AREAS. OUTHOUSE FLOORS, ETC.																
¾ in. ,,	.0131	.0092	.0085	10.21	7.17	7.39	**24.77**	.30	.30	9.03	10.91	**19.94**	44.71	**3**	**8¾**	,, ,, ,,
1 in. ,,	.0174	.0123	.0113	13.57	9.59	9.83	**32.99**	.33	.33	9.93	12.00	**21.93**	54.92	**4**	**7**	,, ,, ,,
1½ in. ,,	.0261	.0184	.0169	20.35	14.35	14.70	**49.40**	.36	.36	10.83	13.09	**23.92**	73.30	**6**	**1½**	,, ,, ,,
2 in. ,,	.0348	.0246	.0225	27.14	19.18	19.57	**65.89**	.40	.40	12.04	14.55	**26.59**	92.48	**7**	**8½**	,, ,, ,,
IN NARROW WIDTHS. TREADS, RISERS, ENDS OF STEPS, ETC.																
in. ,,	.0134	.0094	.0087	10.45	7.33	7.56	**25.34**	.42	.83	12.64	30.19	**42.83**	68.17	**5**	**8½**	**per yd. sup. basis**
1 in. ,,	.0178	.0126	.0115	13.88	9.82	10.00	**33.70**	.48	.97	14.44	35.28	**49.72**	83.42	**6**	**11½**	,, ,, ,, ,,
1½ in. ,,	.0267	.0189	.0173	20.82	14.74	15.05	**50.61**	.52	1.04	15.65	37.83	**53.48**	104.09	**8**	**8½**	,, ,, ,, ,,
2 in. ,,	.0357	.0252	.0231	27.84	19.65	20.09	**67.58**	.55	1.10	16.55	40.01	**56.56**	124.14	**10**	**4½**	,, ,, ,, ,,



*We print below the second of two reviews of the principal exhibits. The first article was given last week. Exhibitors marked * have informed us that they are able and willing to export their plant or materials.*

Bricks, tiles, roofing materials, sanitary ware and cast concrete products.

* **Concrete Products (Chelsea), Ltd.,** are showing P.R.C. spurs and fence posts for close-boarded fences of the cleat and mortice variety; concrete seat ends ("Kensington" pattern) together with the intermediate supports for longer spans; the "C.P.L." post and panel fencing unit for heights between 2 ft. 6 in. and 4 ft. 6 in.; ornamental fluted gate posts, B.S.S. section kerbs, and garden edging, etc. The firm has applied for a patent for an interlocking unit to facilitate the quick building of manholes, with a minimum of excavating. [Stand No. 556, Gallery.]

A brick and tiled building has been erected by **The Finlock Roofing Co., Ltd.,** which incorporates the "Finlock" gutter, which is adaptable for most types of buildings and walls. The "Finlock" lintol type gutter block enables concrete lintols to be cast in the rear portion, which is suitably shaped for this purpose. The lintol then becomes integral with the gutter blocks and is simply cast over all openings as desired. The lintol is concealed and allows the window heads to be within 6½ in. of the wall plate. This small dimension allows the eaves level to be kept down with consequent saving in brickwork on external and party walls. [Stand No. T, 310.]

The stand of **Fisons, Ltd.,** is built with the intention of depicting to the architect and builder the principal use of the "Burwell" white gault kiln-fired facing brick, namely, light reflection. One of the walls of the stand is built of white facings, showing them in use for general purpose building. An interesting variation in the colour of the pointing on this wall is worth inspection, as it shows the difference in character of the finished work. In addition to the white facings, there are flushed facing and selected common bricks. [Stand No. J, 186.]

Henry J. Greenham (1929), Ltd., are showing a range of facing bricks and roof tiles, for which they are the manufacturers' main distributors in the home counties. The bricks displayed do not represent the full range handled by the company, but serve to indicate the variety which can be supplied; colours range from cream and dark grey to rich red multi. The firm specialises in the supply of single lap tiles, especially the Norfolk and Somerset pantiles. One of the exhibits is a new interlocking pantile which enables roofs to be pitched to 30 degrees. [Stand No. 484, Gallery.]

Many interesting models of clay roofing tiles are presented by **Langley, London, Ltd.** While this firm are best known for their range of roofing tiles, it is not so widely appreciated that they also supply ranges of floor tiles, cill tiles and quarries which are also displayed. The "Langboro" floor tiles cover the floor of the stand. An interesting exhibit is the display of building plastic wall panelling sheets. [Stand No. E, 92.]

Modern housing and industrial sanitary equipment and fitments and labour-saving kitchen equipment are featured on the stand of **Lewis and Co. (Balham), Ltd.** A selection of tiled fireplaces of modern designs, with and without boiler flue attachments; convector heating appliances, showing the principles of background heating by hot air; slow combustion stoves in new finishes and domestic boilers in mottled enamel, are also on display. Another section of the stand shows window fittings, door locks and furniture and builders' ironmongery generally. [Stand No. N, 246.]

*A complete range of new floor tiles, which have been used by more than 300 local authorities in all parts of the country and in addition are being exported in increasing quantities, are shown by the **Marley Tile Company.** Marley roofing tiles are also presented, including the new "Anglia" pantile; the trough valley tile, for all types of single lap tiling; and the Marley "Westwold" tile. Notice should be taken of the coloured granules with which all tiles are faced. There is no free colour on the surface of the tiles and they can be handled without staining the hands or clothing. [Stand No. H, 166.]

The exhibit of **The National Federation of Clay Industries** was designed by Mr. Cecil C. Handisyde, A.R.I.B.A., A.A.Dip. The main feature is a tall rectangular column displaying the variety of types, colours and textures available in facing bricks. The bricks used in its construction have been assembled from works in all parts of the country. Clay roofing tiles are used as a decorative motif on the walls of the office. An extensive display of photographs emphasises the predominant part played by clay products in the construction of all types of buildings. An interesting reminder of the long history of clay products is a display of bricks and tiles dating back to Roman times, including portions of tiles bearing the mark of the 2nd Legion. [Stand No. C, 43.]

On the stand of **Noelite, Ltd.,** "Noelite" paving, now manufactured in five colours, is laid in a variety of patterns obtainable by the use of the many sizes in which it is made. A special feature is the non-slip surface of paving especially suitable for surrounds to swimming pools, schools, hospitals and sports grounds, etc. Attractive types of walling, constructed with "Noelite," as used for boundary walls on numerous housing schemes and similar jobs, are also shown, together with a range of photographs of typical jobs on which "Noelite" has been specified. [Stand No. H, 173.]

*The miniature gabled house with loggia and balcony erected on the **Redhill Tile Co., Ltd.'s** stand has been designed to display "Redland" interlocking tiles and valley troughs used in roofing work. The firm claims that on a typical roof of traditional design, for example, the substitution of interlocking tiles for plain tiles results in a direct saving of just over 25 per cent. in roof timber. The valley troughs have been primarily designed for use with "Redland" interlocking tiles, where lead or copper valleys would normally be laid. "Redland" valley troughs are suitable for all the usual roof pitches, and can also be used on roofs of unequal slopes. The upper part of the house is covered with "Redland" plain tiles (size 10½ in. by 6½ in.). [Stand No. E, 90.]

Various roofing techniques employing stone, slate or tile are presented by **Roberts, Adlard and Co., Ltd.** The firm are showing a school classroom roof model of the type they are supplying and fixing for the Middlesex County Council. This roof consists of asbestos decking covered with roofing felt and supported on low-pitch aluminium roof trusses. A roof light formed of curved sheets of corrugated "Perspex" runs the length of the classroom along the ridge of the roof light and is controlled by a series of adjustable louvres beneath. [Stand Nos. 446 and 448.]

*The exhibit of the **Somerset Trading Co., Ltd.,** consists of panels of roofing tiles in various colours and finishes. A large panel displays the "Somerset" interlocking tile (list No. 13), which is shown for the first time in a sand faced finish, and six panels are arranged to give a general idea of the following patterns: Double Roman tile (list No. 11), bold roll double Roman tile (list No. 11A), pantile (list No. 7), "Homestead" interlocking tile (list No. 4), "Rainbar" double Roman tile (list No. 5) and the "Rectory" tile (list No. 6). There are other patterns. [Stand No. C, 48.]

The South Eastern Brick and Tile Federation stand consists of a brick-built pavilion with a sloping tiled roof, occupying one-third of the floor area. The remaining two-thirds of the stand is open and has a patterned quarry tile and brick floor. At the back of the open area of the stand is a brick screen wall, consisting of forty-two small sample panels of facing bricks arranged in cellular fashion with painted deal margins. Nineteen members of the Federation are co-operating in this exhibit and the bricks and tiles shown are representative of the varieties of bricks and clay roofing tiles manufactured in south-east England. The whole exhibit has been designed by Mr. Julian Leathart, F.R.I.B.A. [Stand No. E, 83.]

Builders' and contractors' plant, concrete machinery.

*Shown on the stand of **Edward Benton and Co., Ltd.,** is a selection of "Creteangle" metal moulds for the production of precast concrete fence posts, spurs, crazy paving, air bricks, etc. A feature of these moulds is their robust construction. Designed to give long service, each type has been tested under practical working conditions for a prolonged period. [Stand No. 476, Gallery.]

Blaw Knox, Ltd., show a mobile "junior" weighbatcher, a high-mounted "Rex" 12S concrete mixer and a model 160 concrete pump, arranged in line as for operation, to illustrate the modern method of speedy concrete production and placement. The "junior" weighbatcher weighs aggregates and maintains continuous feeding to the mixer; the 12S mixer represents the "Rex"

"BUILDING EXHIBITION DAILY NEWS"

THE Building Exhibition is to have its own daily newspaper. Published by THE BUILDER *for the Exhibition authorities, the first issue will appear today (Friday) and will be distributed at Olympia. Day-to-day events will be chronicled and contributions may be handed in at* THE BUILDER *Stand (Row G, No. 127), opposite the Addison-road Station entrance.*

range with a 75 secs. mixing cycle and end-to-end, top-to-bottom, over-and-under, mixing action. The concrete pump on show is designed for placing concrete through pipelines. The pump eliminates wagons and chutes, hoists, towers, buckets and cranes. Capacity of the pump is 15-20 cu. yd. per hr., and all well-graded and proportioned concrete of reasonable workability and maximum aggregate size of 2 in. can be pumped. It will transport concrete over distances up to 1,000 ft. horizontally, 100 ft. vertically or a combination of each. The pipeline is constructed of steel tubing. Further exhibits are the "Rex" 3½T concrete mixer, roadforms and "Blawform" steel shuttering. [Stand No. R, 282.]

At the Building Exhibition **A. A. Byrd and Co., Ltd.**, are exhibiting "Tricosal," a liquid medium for waterproofing and hardening all types of cement mixes. It also provides acid and oil resistance to concrete and cement. Demonstrations are given of waterproofing brickwork used in houses and industrial buildings. Decorative finishes and standard cement renderings are shown, together with "Tricosaled" cement grout surface treatment for waterproofing existing brickwork, concrete, cement renderings, swimming pools, reservoirs, tanking, etc. Another product to be found on this stand is interlocking steel shuttering, suitable for use in *in situ* concrete construction. Visitors may see, too, demonstrations of the assembly of steel forms for floors, walls and column construction. [Stand No. T, 304.]

✱ "Hemel" hoisting equipment is shown by **J. Christopher and Sons, Ltd.** The display includes the "Hemel" vertical mobile hoistower, which has a platform of 5 ft. 6 in. by 2 ft. 6 in., and a capacity of 5 cwt. at 75 ft. per minute, or 3 cwt. at 150 ft. per minute, with a standard delivery height of 19 ft. Three models are available: electric, petrol and diesel. The "Hemel-15" diesel hoist is the latest addition to the range and is designed to meet the demand for a larger capacity hoist. Powered by a Petter A.V.2 twin-cylinder radiator-cooled engine, it has a capacity of 30 cwt. at 75 ft. per minute, or 15 cwt. at 150 ft. per minute with 2 to 1 block. Also displayed is the "Hemel-12" petrol hoist, which has a J.A.P. twin-cylinder air-cooled engine type 55 and a capacity of 25 cwt. at 75 ft. per minute, or 12½ cwt. at 150 ft. per minute, with 2 to 1 block; and the "Hemel-5" electric hoist. [Stand No. F, 110.]

✱ Among woodworking tools and equipment exhibited by **Drabble and Sanderson, Ltd.**, are:—"Original Brit" inserted tooth saws; "Elect"-plate, swage, hollow-ground saws, etc.; "Green Back" high-speed steel cutters; "Elect" veneer and guillotine knives, inserted groovers, lock corner cutters, etc.; chain saws for petrol and electric machines and "High Duty" band saws. Also a comprehensive range of the latest developments in "Drabaloy" cemented carbide-tipped saws and cutters and "Saw Doctor's" shop equipment comprising: Universal tool grinder for tungsten carbide saws and cutters; "Elect" swage and shaper, circular saw setter, side filer, gauges, etc., timber measurers, bandsaw filing and setting machines, anvils, hammers, etc. [Stand No. 545, Gallery.]

✱ **W. Kennedy, Ltd.**, show a full range of "Kennedy" patent bending machines for cold bending tubes and sections in all metals. Demonstrations are given daily. Machines to suit various trades are shown as follows: Plumbers: steam and water pipe benders, light gauge copper tube benders; electricians: benders for screwed and split conduit and for alloy conduit; engineers: universal benders for tubes, angles and other sections; tubular furniture makers: the No. 12 light-gauge tube bender; refrigeration engineers: bench and portable benders for refrigerator work; reinforcement concrete engineers: bar benders for bars up to 2-in. dia., bent cold; model makers: the new No. O universal bender. [Stand No. K, 211.]

H. S. Langton are exhibiting their "Ace" extension ladders made in two and three sections with rope and pulley attachments, their push-up types fitted with steel rods under every rung for additional safety, and the "Ace" telescopic scaffold trestles. Also being displayed are their tower ladders fitted with new winch gear attachments, a range of pole ladders made of imported poles with all rungs wired for additional safety, and builders' steps and platform steps. Their steel tubular trucks fitted with pneumatic wheels and a display of "Ace" ladder brackets can also be seen on this stand. [Stand No. L, 228.]

Hand tools and machines for contractors builders and general engineers are being shown by **Lawler, Ayers and Co., Ltd.** The complete range of "Tubela" pipe-bending machines are exhibited, with many additional models and new machines. The most recent "Tubela" hydraulic pipe-bending machine will be on view as will machines for pipe bending in brass, copper and heavy-gauge steel barrel. In addition, a range of "Laco" branded hand tools for constructors and general engineers are on show, including a new hand tool for cutting slate and asbestos, the new "Laco" hand-operated cutter for dealing with corrugated asbestos sheets, and the "Laco" hand cutter for corrugated iron, together with improved pipe vices and stands, both of the self-locking hinged type and the chain grip type. [Stand No. N, 249.]

"Vulkaset" painting, varnish and distemper brushes are shown by **Christopher Leng and Sons, Ltd.** "Vulkaset" in rubber is the form of paint brush construction originated by this firm. The wide range of patterns on view includes many familiar, well-tried types and introduces some new ones. Leng's products are distributed exclusively to decorators' merchants, builders' merchants, etc. [Stand No. G, 139.]

✱ The "Alco" self-priming 1½-in. and 2½-in. centrifugal water pumps are among the most interesting exhibits shown by **Arthur Lyon and Co. (Engineers), Ltd.** The "Alco" 1½-in. pump is driven by a J.A.P. single-cylinder 4-stroke air-cooled petrol engine developing 1-3 h.p. The pump body is of aluminium alloy. The machine is capable of pumping 2,600 gallons an hour. The firm will also be showing "Alcomatic" 2.5 and 5 k.W. diesel lighting sets each of which is powered by a Petter vertical, single cylinder, 4-stroke, water-cooled, cold starting, solid injection diesel. The standard model is radiator-cooled, but tank cooling may be provided if required. The British Standard 12-hour rating is 5 h.p. per cylinder, the 2.5 kilowatt having one cylinder, and the 5 kilowatt having two cylinders. [Stand No. 405, Gallery.]

✱ A model of the temporary building designed and constructed for the National Welsh Eisteddfod at Bridgend, Glamorgan, in 1948, and which seated approximately 10,000 people with choir galleries and raised platforms for competitors and instrumentalists is shown by **Mills Scaffold Co., Ltd.** There are also models of the latest technique in scaffolding, including "H" fame construction and heavy suspended scaffolding, and photographs of work carried out by this company in many parts of the world. On view, too, are the types of fittings which this firm use on all their contracts. [Stand No. F, 111.]

✱ The stand of the **Northern Steel Scaffolding and Engineering Co., Ltd.**, is in the form of two tubular towers supporting a tubular roof cantilevered over the two sides, standard aluminium alloy tube and fittings being used for this purpose. This firm claim to be the first to use this material for the manufacture of scaffold fittings. Since the last Building Exhibition the company have designed the "Norstel" unit grandstand which is a prefabricated structure and can be supplied in units to seat 50 people and upwards. It is constructed entirely in aluminium alloy sections and will be on show. [Stand No. C, 58.]

Frederick Parker, Ltd., are displaying a wide range of machines several of which are being demonstrated. The "Little Giant" hand-fed machine mixes concrete, mortar, builders' compo, tarmacadam, plaster, and hair plaster. The models shown are the 3½ G (5/3½ c. ft. capacity), mounted on four metal road wheels and fitted with 1½-b.h.p. air-cooled engine; and model 3½ GS, the speed-mobile machine, with 1½ b.h.p. water-cooled engine. The "Parker" portable belt loader type "FLA" demonstrates the stacking, loading and shifting of a wide variety of materials. This loader is claimed to cut man-power by more than one half. It has a belt width of 6 in. and is 30 ft. between centres. [Stand No. P, 264.]

Pegson, Ltd., are showing an improved version of their Pegson power rammer. This machine is now fitted with an improved carburation system which in addition to effecting fuel economy, gives improved performance. They are also exhibiting examples of the latest model of the petrol-powered Pegson concrete breaker, and in addition a range of centrifugal self-priming pumps; both portable and fixed units are on show, including a sectional model. Also to be seen is the prototype model of the 28-in. Intercone crusher, which is a larger version of the 18-in. Intercone. [Stand No. B, 32.]

✱ A range of ladders of the pole, double and triple extension types, are shown by **William Randall and Co. (Horsham), Ltd.** All extension ladders over 15 ft. closed are reinforced with steel wire along the undersides of the strings. This firm also manufacture steps, trestles and scaffold boards. [Stand No. 444, Gallery.]

✱ **Ransomes and Rapier, Ltd.**, are exhibiting the Rapier 3-ton mobile crane. Mounted on pneumatic tyres, this crane has a fully revolving superstructure. The drive is petrol-electric or diesel-electric, with variable voltage control and separate motors for hoist, derrick, slew and travel motions. Other machines shown include the Rapier 5 N.T. trailer mixer mounted on two independently sprung road wheels with pneumatic tyres and a tow-bar with coupled brakes for high-speed towing; and Rapier 5 T. concrete mixer which has a capacity of 7 cu. ft. unmixed and 5 cu. ft. mixed batch and is a power loading machine. [Stand No. K, 196.]

✱ **Red Circle, Ltd.**, exhibit a range of concrete mixers embodying a patented hydraulic principle for raising the loading hopper and so discharging the materials to be mixed into the mixing drum. Two sizes of machines are exhibited incorporating this principle; the "Lion" 6/4½ machine, which was first shown two years ago, and a newcomer to the range, the "Hippo" closed drum 10/7. On both machines the visitor will notice the absence of the old system of clutches and wire bonds for raising the loading hopper, and will observe how all the mechanism on both machines is protected underneath the engine hood. [Stand No. Q, 270.]

The "Husky-Dumpy," a general-purpose vehicle for the conveyance of concrete, excavation spoil, bricks, cement, etc., on the construction site or in and around the works, is being exhibited by **Road Machines (Drayton), Ltd.** The model on show is fitted with a ½-yd. tipping body, but the "Husky-Dumpy" is also supplied with a ¾-yd. body, with or without hand control tip, timber platform body or specially built control discharge hopper bodies. A turning circle of 7 ft. 6 in. radius, coupled with the two-way drive, reduces manoeuvring to the minimum. The machine has a top travelling speed of 12 m.p.h. This stand also features the single bucket "swing-weighbatcher," [Stand No. P, 268A.]

A full range of ladders, etc., can be seen on the stand of **Shaftesbury Ladders, Ltd.** These include builders' steps, trestles and ladders, push-up extension ladders, rope and pulley extension ladders, and three-section rope and pulley ladders, telescopic trestles, billposters' slides and platform steps, light general purpose extension ladders, and light patrol ladders. Three types of tower ladders are also on show, the factory maintenance tower, the altitude tower, and a four-section dual purpose trailer tower. The latter item is a dual purpose unit for both towing and hand movement. [Stand No. 468, Gallery.]

The exhibit of **Shetack Tool Works, Ltd.** consists mainly of their range of "Monument" brand and "Shetack" tools. This range includes mallets and plumbers' wood tools, the "Shetack" saw, hole cutters, tools for the spigot joint method of soldering lead pipe, shavehooks, caulking tools and clips, drain-testing plugs, tools for sheet copper roof work, iron pipe and copper pipe cutters, and the "Aplex" tank-repair bolt. New products include a larger copper pipe cutter

for cutting tubes up to 2 in. diameter. [Stand No. S, 299.]

*The "Skarsten" scraper, a modern development of the old flat steel blade, is shown by **Skarsten Manufacturing Co.** The Skarsten blade is hook-shaped and made of hardened and tempered steel. The new type serrated blades fitted to the dual scraper is for stripping very hard old coatings. The plaster crack scraper is an all-steel tool with a triangular blade at each end for opening out cracks on walls and ceilings before replastering, and the combination screwdriver and bradawl is a tool made of steel and bakelite of which the screwdriver remains fixed while the bradawl can be pushed up so that the point projects beyond the screwdriver; the bradawl springs back again by pressing a button, leaving the screwdriver ready for use. Also displayed is a repointing tool for breaking up and scraping out old mortar before repointing brick walls. [Stand No. 431, Gallery.]

A comprehensive selection of goods produced by **H. C. Slingsby, Ltd.**, includes the new "Slingsby" ladder safety shoes. These are made of aluminium alloy castings and the bottom has a milled rubber insert to prevent slipping. One pair of these shoes is intended to serve several types of ladders on sites where safety shoes are desirable, as opposed to safety feet permanently attached to ladders. The area of contact with the ground (or floor) is 38 sq. in., as opposed to the type fixed to an individual ladder (approximately 22 sq. in.). The "Slingsby" fireplace tile surround truck is another feature of this exhibit. [Stand No. K, 213.]

***John Smith and Co. (London, E.), Ltd.**, are exhibiting their "Elephant Brand" portable, collapsible canvas shelters. These shelters are constructed with iron, steel or aluminium frames and the covers, made of heavy-weight proofed canvas, are sewn on or loose, according to requirements. The range of shelters includes a number of specialised types, such as watchmen's huts, lavatories, jointers' and cable layers' tents (with steel, aluminium or wooden frames), masons' cemetery shelters, chalets and utility shelters. The utility shelter, a light and easily erected shelter of new design, is suitable as an addition to a caravan. Other products on show include stillages, car-radio display tables, portable cots, folding chairs, hammocks, duct rodding reels, manhole guards and flags. [Stand No. D, 64.]

The Thwaites Agricultural Engineering Co., Ltd., are showing the Thwaites builders' hoist, which is a light lifting appliance of the lean-to type, and has been designed to elevate all sorts of building materials including bricks, tiles, mortar, blocks, lintols and concrete, etc., to heights ranging from 9 to 30 ft., and is particularly suitable for use in the erection of buildings of up to three storeys. It consists of a small portable windlass, powered by a 2½-h.p. engine which is hinged to the tubular telescopic members which form the guides for the cages. Tiles are carried in an enclosed cage and concrete in a special tipping skip. [Stand No. 474, Gallery.]

***Trianco, Ltd.**, are showing their block-making machines and other equipment, including the "Trianco" automatic heating and domestic boiler. In connection with the firm's stand No. P, 263, part of the construction consists of a built-in fireproof floor undertaken by an associate company, Smith's Fireproof Floors, Ltd. Telescopic centres have been used in the construction of this flooring. Featured also is a new product, the Bar Spacer machine, which manufactures small concrete discs in various sizes. These are placed over reinforcement rods before inserting in the moulds and are used when casting products to ensure the correct positioning to give proper coverage. [Stands Nos. P, 260 and P, 263.]

***Tyrol Sales, Ltd.**, are showing the "Tyrol" machine used for applying open textured facings such as the "Tyrolean" Cullamix finish and Cementone machine-cast textured finish. It is claimed to be one of the quickest means yet devised for applying these finishes. About 80-100 sq. yds. per 8 hours can be completed. One cwt. of material completes about 12 sq. yds. The "Tyrol" is simple in construction, light in weight and easy to clean during and after use. It is suitable for applying facings direct to concrete, masonry, asbestos-cement, cement-lime-sand renderings, and to practically all renderings having suction. [Stand No. J, 192.]

***Barrows**, concrete carts, water carts, brick barrows and hand angle, rod and flat croppers and benders are among products exhibited by **W. Westover and Co.** Their new type "62" concrete tipper has a capacity of 7 cu. ft. liquid or 9 cu. ft. solid measure and is fitted with two solid centre pneumatic-tyred 27 in. diameter wheels with ball bearing. By operating a foot pedal the body may be tipped forward for emptying. Another new model here is the type "47" steel brick barrow which has a carrying capacity of 5 cwt. [Stand No. 514, Gallery.]

***Of the six exhibits on the stand of **Winget, Ltd.**, five have been placed on the market since 1947. These five new machines are the Winget 3½-T trailer mixer, a mixer specially designed to combine the two functions of towing and mixing to the best possible advantage; the Winget 5 T/H hopper-fed tilting mixer, also made in 7 T/H (10/7 cu. ft.) size; and the Winget 10 NT non-tilt mixer. Also on show is the Winget "Lolode" 3-ton plant transporter for mixers up to 7 NT, which will also take the Winget 10 NT. It can carry pan mills, compressors, wheeled or crawled tractors, large pumps, etc., and can be loaded by two men in a comparatively short time. Lastly, the Winget "Vibrocon" vibrating spade, arranged for electric, petrol or pneumatic drive, is specially noted for its high frequency vibration of 9,000 v.p.m., with low shaft speeds of 3,000 r.p.m. [Stand No. N, 243.]

W. C. Youngman, Ltd., introduce for the first time a new light-weight staging for painters, decorators, shopfitters, etc. Designed to supersede scaffold boards for these particular trades, it is 18 in. wide, and is at present available in a range of sizes up to 18 ft. in length. Made from selected timber reinforced with galvanised straining wire it weighs only 3 lb. per ft. In addition, this company displays a comprehensive range of ladders, steps, trestles, barrows, trucks and similar plant. In a separate display on an adjoining stand may be seen the "Leda" range of bathroom fittings. [Stand No. K, 198, 9.]

Constructional and engineering, pipes and fittings, metalwork, ironmongery.

The "AnD Wedge Method" of fixing boards is demonstrated in the construction of the stand of the **Anderson Construction Co., Ltd.** The canopy is lined with board fixed by this method. To enable visitors to become familiar with recent developments made by this firm, a raised observation cabin has been constructed permitting examination of the clips and supporting T-sections from above. Cut-away models of "AnD" partitioning are displayed, showing treatment at corners, glazing, etc. [Stand No. R, 285.]

The "Kenham" self-operating gate catch, spring-loaded hinge, rubber door wedge and flexible rubber stair clip may be seen on the stand of **Bancroft and Partners, Ltd.**, together with "H.B.D." precast concrete walling and pillar units in assorted colours, and the "H.B.D." iron gate with automatic latch and self-closing hinge. [Stand No. 403, Gallery.]

*"Galvanite," a chemical process which, it is claimed, prevents iron and steel from becoming corroded by rust, is a new product presented by **Banham's Patent Locks, Ltd.** It is a mixture consisting of very fine particles of zinc held in suspense in a fluid, and resembles a thick paint. It may be applied to iron or steel needing protection on top of rust which may already be present, for it is claimed that it also destroys rust to which it is applied. Visitors to this stand will also see the "Banham" deadlocking cylinder latch. [Stand No. 417, Gallery.]

*Displaying a range of auxiliaries for reinforced concrete work is **British Steel Reinforcement, Ltd.** They include: "Besserfix" supports and spacers for all types and conditions of concrete reinforcement; "Besserbar" interlocking waterbar for sealing construction joints to tanks, basements, etc.; "Besserform" bolt hole former with the double dovetail grip and removable and fixing plates; "Servais" road reinforcement, a system of reinforcement where one or two layers are required in the top of the slab; and the "Bessertye" tye and spreader for all forms of shuttering. [Stand No. 414, Gallery.]

*An average dining-room and lounge, divided by a pair of sliding doors mounted on "Estate" sliding door gear, enabling these rooms to be enlarged for entertaining, etc., and allowing sunshine into opposite aspects of the house simultaneously is shown by **Clarke Ellard Engineering Co., Ltd.** A new flush handle for sliding doors is the "Rapide," which is made of plastic. Another innovation is a range of twin channel tracks for frameless glass sliding doors for show cases, cupboards, cabinets, etc. [Stand No. 450, Gallery.]

A display of "Expamet" expanded metal products is exhibited by the **Expanded Metal Co., Ltd.** These include: Expanded steel reinforcement for concrete; "Ribmet" reinforcement and permanent centering for long-span concrete decking, and for thin concrete sub-floors supported on light steel joists; and "BB" expanded metal lathing for plasterwork. "Exmet" reinforcement for brickwork is shown in use, and a window opening constructed in a brick wall reinforced with "Exmet" demonstrates the elimination of a lintol above the opening. "Expamet" expanded metal openwork flooring and walkways are also shown. [Stand No. E, 86.]

Zinc and copper roofing is shown by **G. A. Harvey and Co., Ltd.**, together with the "Harco" glazed partitioning which has been used in the construction of the office on this stand. "Harco" ornamental metalwork is also displayed as is the firm's range of mild steel gutters, pipes and fittings. The hot dip galvanising process used by Harvey's will be noticed by visitors who view the display of tanks, cisterns and cylinders to be found on this stand. A range of "Harco" steel equipment comprising desks and tables, filing cabinets, cupboards, shelving and clothes lockers, storage bins and racks, may also be seen. [Stand No. G, 135.]

*An exhibit showing the latest developments in sanitary fittings suitable for use in schools, hospitals, industrial and office buildings is presented by **W. N. Froy and Sons, Ltd.** One of the features is lavatory basins and closet suites in heavy earthenware, a material which the firm strongly recommend for use in schools. [Stands Nos. 524, 6, B, Gallery.]

The main features of the exhibit of **Holloway Metal Roofs, Ltd.**, are copper and zinc roof panels. Also to be seen is a new system of jointing light gauge roofing copper glued to insulation boarding which dispenses with a timber understructure. Copper and zinc rainwater goods, copper expansion jointing, copper dowels, cramps, wall ties, etc., are also on view. A further feature of the exhibit is a demonstration of the weather stripping of windows with zinc. [Stand No. 464, Gallery.]

The "Kingley" method of jointing is demonstrated by **King's Langley Engineering Co., Ltd.**, who are showing their range of copper tube fittings. Introduced for the first time is the "Kingley Senior" fitting for sizes 2½ in. - 4 in. tube. [Stand No. 415, Gallery.]

The "Bandlon Super" unbreakable axle-box, designed for all light railway wagons, is displayed by **M. E. Engineering, Ltd.** It is of pressed steel construction, spherically self-aligning and incorporates a device for the retention of grease and exclusion of dust. Each axle-box has its own built-in greasing unit with ample grease reserve, operated by a knurled wheel on the outside of the box. It is fitted with a precision roller-bearing revolving in a case-hardened sleeve. Another new item is the "Maco" steel wheelbarrow with body pressed from one piece of steel sheet. The body has no seams and no bolts or rivets are protruding for the body is fixed to the frame by a special device. These barrows are made in 3 and 4 c. ft. capacities. [Stand No. D, 65.]

Meta Mica, Ltd., are exhibiting the following products: "MetaMica" insulation roof

and floor screeds, trowelled finish for walls and ceilings, nailable floor screeds, spray finish for walls and ceilings and loose fill insulation. [Stand No. 494, Gallery.]

A display of "MBL" capillary fittings for jointing light gauge copper tube is presented by **The Mint, Birmingham, Ltd.** They are also exhibiting light gauge copper tube; copper cistern balls of the solderless and soldered types with emphasis upon the solderless pattern for use in districts where the water has a corrosive effect upon the solder of the normal soldered ball; copper sheet and strip for roofing and damp courses; and copper corrugated sheets. [Stand No. 479, Gallery.]

The Piper multi-purpose door frame brace can be seen on the stand of **W. Piper.** It is a metal frame, adjustable to suit all standard wood or iron linings. It is braced to secure squareness of head, fitted with a level to ensure uprightness and equipped with adjustable supporting stays to maintain rigidity during building operations. The use of this brace obviates the trouble of having door frames and linings fixed out of true and heads out of square and saves time spent in rectifying faults due to incorrectly fixed linings and frames. [Stand No. 457a, Gallery.]

Features of their improved sash chains and pulleys for hanging sliding sashes, blackboards, lift shutters and work of similar character, are to be seen on the stand of **Rhodes Chains, Ltd.** The new sleeve axle, ball-bearing, and wide range of other types of pulleys produced by this firm are also shown. Those interested in reducing sash line maintenance costs are catered for by chains designed to replace existing sash cords as they break. On view, too, are a wide range of sash and casement fittings, and chains for all purposes connected with the building and allied trades. [Stand No. H, 169A.]

✱Copper tubes and fittings for all classes of building work will be found on the stand of **C. Ryan and Co.,** There are also various types of tube fittings (capillary solder, screwed, brazing and compression) and copper pipes for use in all phases of building work—heating and hot water, sanitation, plumbing, underground supply, gas, oil, ventilating, etc. Visitors can select any make of joint and have it put under pressure test on the demonstration bench. Being shown, too, is the "Ryanco" electric jointing kit for sweating capillary type solder joints, such as the "Yorkshire," "Endex," "Ideal," "M.B.L." and "Sidex." Copper storage and indirect cylinders are on view, with bending machines and springs and steel cleaning wool. [Stand No. B, 24.]

Photographic enlargements of fabricated tubular steel products are displayed by **Stewarts and Lloyds, Ltd.** In the centre of the stand a revolving table carrying examples of plumbers' brass foundry products as manufactured by John Russell and Co., Ltd., an S. and L. subsidiary, will be found, while on tubular steel tables surrounding this centrepiece are: (1) Examples of black and galvanised screwed and socketed steel tubes (B.S. 1387) and a collection of screwed fittings; (2) Samples of a new type of standardised hand-railing, with the range demonstrated by a model; (3) A selection of joints suitable for gas, water and steam including Victaulic Joints and Johnson Couplings. [Stand No. E, 101.]

"Templer's" plumbers' black, a medium for plumbers to use when wiping joints, and "Templaster Filler," a water-mixed compound for use in repair work to plaster and woodwork, are to be found on the stand of **C. G. Templer and Co.** Demonstrations of these products are given frequently. [Stand No. H, 165.]

The Thermagard system of construction for schools which is now based on the 3 ft. 4 in. module and uses approximately 1-ton of steel per £1,000 cost of building, is shown by **Thermacoust, Ltd.,** Roofs are constructed of channel reinforced Thermacoust wood wool slabs spanning between roof beams. The latter are of the expanded plate type of construction at either 6 ft. 8 in. or 10 ft. centres. Beams are available for different spans in multiple of 3 ft. 4 in. Windows are of extruded aluminium and are secured to double channel stanchions with extruded aluminium cover plates, and incorporate concealed operating gear for high ventilators. Cills and fascias are of pressed aluminium. [Stand No. D, 80.]

✱Under the trade name of "Streemcast" the **H. J. Thormann Engineering Co., Ltd.,** are exhibiting range of builders' ironmongery and domestic fittings. The present range includes door and cupboard bolts and catches, necked bolts, door safety chains, fanlight catches and door numbers. For the first time the new necked bolt and fanlight catch will be shown. [Stand No. 421, Gallery.]

✱Examples of "Wireweld" fabric and square twisted bars are featured at the stand of "**Twisteel**" **Reinforcement, Ltd.** Photographs and drawings of reinforced concrete structures, designed by the firm's engineering staff, are shown together with a large-scale model showing the stages of construction of a barrel vault roof designed by a subsidiary company. The stand is designed by Mr. Edward D. Mills, F.R.I.B.A. [Stand No. D, 72.]

✱A complete range of rainwater gutters and fittings in various sizes, rainwater pipes and fittings, rainwater heads, vent pipes and fittings, soil and sanitary pipes and connections and fittings is shown by **Vitreflex, Ltd.** They are exhibiting samples of a new type of pipe with an internal socket. [Stand No. Q, 279.]

✱A comprehensive range of "Vulcan" products is exhibited by **Vulcan Manufacturing (Wolverhampton), Ltd.** It includes "Dreadnought" door bolts of brass and steel; garage bolts, locks and latches; hasps and staples; casement stays; gate latches; gutter and shelf brackets and builders' ironmongery [Stand No. 532, Gallery.]

✱"Nucana" rods suitable for drain cleaning and conduit threading are shown by **Ward's Flexible Rod Co., Ltd.** Three standard diameters are manufactured: 1¼ in. for heavy duty work such as sewer cleaning; ¾ in. for 4 in. to 6 in. drainage work, conduit threading, chimney cleaning, etc., with flexibility similar to cane; ½ in. for working in small diameter pipes. The rods are supplied in various lengths, in sets, with leather straps and the usual fittings. Special lengths up to 25 ft. long can be supplied if required. [Stand No. L, 225.]

"Yorkshire" solid drawn light gauge copper tubes and "Yorkshire" fittings for domestic hot and cold water services; gas, heating, waste and sanitation pipelines; "Yorcalon" copper tubes for underground water services, and panel heating installations, etc., are among items to be seen on the stand of **The Yorkshire Copper Works, Ltd.** "Yorcalon" tubes are prominently featured, and an adjacent display demonstrates the use of the "Yorkshire" re-rounding tool for correcting the ends of "Yorcalon" tubes. These fittings are made from an alloy which is highly resistant to dezincification and can safely be used for joining buried pipelines. Also on view are sections from "Yorkshire" light gauge copper tubes, one section being from a water service pipeline recently dug up for examination after being underground for 20 years, the other being a section from a gas service pipeline recently dug up after 13 years' service underground. [Stand No. G, 132.]

Examples of architectural ironwork rust-proofed by the sherardising process are featured by the **Zinc Alloy Rust-Proofing Co., Ltd.** The stand forms a technical information bureau where visitors will be able to obtain full particulars of the process, its cost, and details of the uses to which it can be put in the building trade. The exhibitors do not manufacture architectural ironwork, but carry out sherardising for the actual makers of such items as steel casements, metal trim, electrical conduit, iron door furniture, screws, nails, gate fittings, etc. Sherardised products will be on view on many of the stands at this Exhibition. [Stand No. T, 302.]

Equipment, heating, lighting, ventilation, electrical and gas.

Adamsez, Ltd., are exhibiting a range of sanitary fireclay ware including examples of school lavatory basins and closets. Also on view is apparatus demonstrating the methods of manufacture of the firm's goods. [Stand No. C, 50.]

A display of "Sadia" coal-electric and electric water heaters, with models suitable for both domestic and industrial installations, is presented by **Aidas Electric, Ltd.** The new coal-electric "Sadia," with built-in cold water storage tank provides an automatic hot water supply throughout the year. In the winter months the water is heated by the fire. In the summer when the fire is not wanted, the water is heated by electricity. [Stand No. D, 71.]

W. H. Colt (London), Ltd., who, with their associate company, Colt Ventilation, Ltd., occupy Stand K, 210, have as the main feature of their display a paraboloid section of a ceiling using vermiculite plaster in three coats on "Colterro" electrically kilned lathing. "Colterro" provides a key for curved and plain plasterwork, both interior and exterior. "Coltenite" cement waterproofer is also shown, and compression and percolation graphs of this product are on view. On the ventilation side, a new inflow unit, shown for the first time, is flanked by other industrial ventilators in the Colt range. [Stand No. K, 210.]

Cresset Fireplaces, Ltd., designers and manufacturers of tile, faience, briquette and stone fireplaces, are exhibiting four models from their standard range of designs. This firm also manufactures to clients' and architects' specific requirements. [Stand No. A, 10.]

A full-size model of the "Econa" preformed internal drainage for one of a block of multi-storied dwellings is shown on the stand of **Econa Modern Products, Ltd.** Representative specimens of tubular copper traps and fittings are shown separately and assembled into basin waste ranges. On the same stand, Economic Water Softeners, Ltd., show water softeners of the domestic type and, as an example of the larger models, a 2 ft. 6 in. diameter plant capable of producing 20,000 gal. of soft water between regenerations. [Stand No. 481, Gallery.]

The stand of **Ezee Kitchens, Ltd.,** consists of a complete U-shaped "Ezee" kitchen incorporating their 60 in. stainless steel sink and double drainer unit, a 42 in. stainless steel sink and single drainer unit, B. N. "Ezee" electric cooker, "Prestcold" built-in refrigerator, broom cupboard, wall cabinets and counter units covered with Formica, also their folding ironing board and folding table. The cabinets are manufactured of Zintec steel, which is bonderised and stove-enamelled. The sinks and counter cabinets are 24 in. deep from back to front. A free planning service is available to clients and builders. [Stand No. 439, Gallery.]

✱A display of stairtreads manufactured by **Ferodo, Ltd.,** can be seen on their stand. This includes Ferodo fabric stairtreads in aluminium channels in various sections to suit all normal types of stair. The Ferodo composition stairtreads in aluminium channels are shown in three colours, red, white and grey, and being non-slip when wet, they are suitable for use out-of-doors. The Ferodo fabric steel-backed stairtreads for fitting to either new or part worn stairs are particularly suitable for factories and industrial premises generally. [Stand No. K, 212.]

A display of vitreous enamelled lavatory basins, stainless steel sinks, the Bendix home laundry and unit furniture, can be seen on the stand of **Fisher and Ludlow, Ltd.** The vitreous enamelled lavatory basins and a pedestal basin unit are available in a range of five colours. A new type of lavatory basin fixing bracket is also presented, as an alternative to the standard form of support. A full range of stainless steel sinks is displayed, including a new double draining board model. The "Flowstyle" unit-planned equipment is shown demonstrating how shelving, cupboards, cabinets, desks, tables and counters can be built up from standardised steel components. [Stand No. K, 206.]

Two illustrated panels are on view on the stand of **The Gas Council,** one describing "new standards of comfort," the other illustrating "ventilation." The ventilation panel stresses the importance of good ventilation and shows various methods of flueing,

designs of terminals and airbricks. Other features of the stand are gas cookers; gas and coke fires; washing machines; boilers and drying cabinets; radiators; and the new incinerators for the disposal of refuse in hospitals and in the cloakrooms of hotels, factories and business houses. The stand is dominated by a full-size replica of the gas-fire flue construction for a multi-storey building, illustrating the method of installing precast flue blocks. [Stand No. P, 267.]

* **The Graviner Manufacturing Co., Ltd.,** exhibit is devoted to the display and demonstration of their hot water and steam heating aluminium radiators, incorporating both panel type and sectional type, together with full range of fittings, control valves and associated equipment. The control valves and angle unions are a new range of clean pattern and manufacture in the highest grade specification brass and gun metal. Developments of particular interest to the architect and heating engineer include preformed radiators on an entirely new system and electrically heated floor and wall type radiators [Stand No. 432, Gallery.]

An exhibit consisting of thermal engineering units, radiators, panel or wall radiators, and boilers can be seen on the stand of **Gulf Radiator Co., Ltd.** The new "Column" steel radiator is made in various widths, heights and lengths and can be extended or reduced if necessary. The "Heatmoor" boiler is also being displayed and has a "dome head" waterway. [Stand No. 437, Gallery.]

The material displayed on the stand of **Ideal Boilers and Radiators, Ltd.,** includes "Ideal" domestic fuel-burning appliances, radiators, towel rails, copper fittings and "Standard" sanitary appliances. The "Ideal Neofire," which provides central heating and hot water supply, is shown, as well as the latest types of "Ideal" gas boilers. The display of "Standard" sanitary appliances consists of four bathrooms showing the "Adapto" baths and vitreous china lavatories in colour. A new cream mottle vitreous enamel finish is available for a number of "Ideal" boilers and the "Ideal Cookanheat." [Stand No. Q, 274.]

The two main exhibits of the **Primon Engineering Co., Ltd.,** are their "Master" door check and their automatic "Marnan" cramp. The former is supplied in three sizes for doors up to 120 lb. and in a variety of finishes to match any colour scheme. The latter can be obtained in two models: the "Marnan" universal assembly cramp and the "Marnan" minor automatic sash cramp. [Stand No. 459, Gallery.]

Rely-a-Bell Burglar and Fire Alarm Co., Ltd., are exhibiting a range of electric burglar alarms for warehouses, banks, shops, private houses, etc., and also collapsible window grilles and gates. A range of locks for doors, fanlight, casement and french windows are also being shown. [Stand No. 533, Gallery.]

An interesting exhibit on the stand of the **Staines Kitchen Equipment Co., Ltd.,** is their new "Autosink" domestic crockery washing machine, which comprises a stainless steel sink unit with cabinet underneath and fully automatic crockery washing system for the private house. Also exhibited are the "Splendid" crockery washing machines for hotel, canteen and industrial use, and Staines sinks in Burma teak, galvanised steel, stainless steel and porcelain-enamelled fireclay. Crockery racks and cellulosed kitchen furniture can also be seen on their stand. [Stand No. B, 23.]

The **Standard Range and Foundry Co., Ltd.,** show examples of their fireplaces, sanitary-ware, kitchen equipment and ironmongery. The fireplaces exhibited are new in design and are representative of the range manufactured by this company. The bathroom includes a new type of "curtain roll" bath with shower screen, together with lavatory basin, low level closet suite and bidet. Adjacent to the bathroom is a section devoted to drinking fountains, lavatory basins, urinals and closet sets suitable for public buildings and factories. There is an example of a modern kitchen, comprising enamelled steel cupboards, sink unit with rustless steel sink and a new type of electro-steam cooker. [Stand No. A, 5.]

Doors, windows, timber, joinery, glass and glazing, floorings, trim, fencing.

Sealing strips for fitting to doors and french windows are featured on the stand of **Atomic Draught-Sealing Co.** These draught-sealing strips are first tacked in position and then sprung by means of a wheeled tool to close the aperture between doors and frames, windows and window-frames. Advice and literature on the effective fitting of the strips is available on the stand. [Stand No. 495, Gallery.]

The main structure of the stand of **Fredk. Braby and Co., Ltd.** consists of an office specially designed to show new type "Bar-Form" metal partitions, constructed mainly of aluminium alloy. Hinged sliding and double swing doors are incorporated. New features in construction and design are shown in a composite metal window exhibit, while copper roofing, as used in conjunction with wood wool slabs, is also on view. This method of roofing is of interest owing to the fact that timber is almost entirely eliminated, and that the roof has a high insulating value. Free standing exhibits also include pressed steel stairs, tanks, cisterns and cylinders, galvanised mild steel gutters and pipes, etc. [Stand No. K, 207.]

Bryce, White and Co., Ltd., present a wide variety of products including a full range of doors for interior and exterior use, an assortment of easily installed, economically fixed wallboards, including insulation board, hardboard, plaster board, laminated board, plastic panels and structural slabs. The mouldings exhibited are varied in type and design. These can be supplied to all standard patterns and to any special sections. Technical representatives in attendance on the stand will welcome any questions concerning any of the firm's products. [Stand No. E, 84.]

The objects of this year's exhibit of **Carter and Co., Ltd.,** are: (*a*) To call the attention of designers to the variety of texture available in their products (including materials other than tiles); (*b*) to show that comparatively large tiles can be used on curved surfaces; (*c*) to show that the use of tiling is not limited to structures of a "heavy" character. In order to concentrate attention on the texture of the materials their colour has been confined to buff only, although some qualities and textures are available in other colours. Both eggshell and glossy glazes are to be seen on ordinary plain, morocco-faced, low relief and new corded surface 6-in. by 6-in. tiles. The various surfaces of floor tiles are shown and faience and glazed terra-cotta shown as plain 12 in. by 8 in., 18 in. by 12 in., cut into large and small special shapes both flat and in low relief; 9 in. by 9 in. cushioned, plain and coffered; 12 in. by 12 in. cushioned edges and 12 in. by 12 in. low pyramids. [Stand No. D, 76.]

* **The Crittall Manufacturing Co., Ltd.,** show examples of Standard metal windows—hot-dip galvanised; standard french doors; aluminium windows, including a typical office window—bottom-hung above folding casements, made from extruded aluminium sections, and the "Crittall-Luxfer" aluminium double-hung sash. A typical example from a large range of standardised "Georgian" type windows; pressed steel products, including a door complete in pressed steel frame typical of the range of standards manufactured; a typical classroom window composed of standardised H C H and B H units of universal casement sections coupled with transoms and mullions; and sliding folding doors, in four leaves for an opening 9 ft. wide by 7 ft. 6 in. high, are also featured. Also on show are examples of "awning" and "projected" windows, teak louvres, and flyscreens. [Stand No. E, 88.]

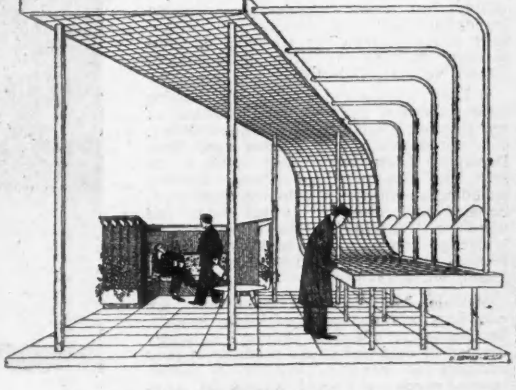
Cygnet Joinery, Ltd., are displaying examples of their solid walnut panelling, panelled and flush doors in hardwood veneers and their "Cygnet" laboratory fittings. For housing there are samples of the "Cygnet" Door, the B.S.S. window, the sliding sash window with "Unique" balance and standard kitchen units. Also shown are their single and double glazed "Rowhill" window, the "Rowhill" draught-proof door and the "Cygnet" window. This firm offers a specialised "Supply and Fix" service, details of which can be obtained from the stand, and they also produce joinery to architects' specifications or for industry. [Stand No. 424, Gallery.]

The exhibits of the General Rubber Goods Division of the **Dunlop Rubber Co., Ltd.,** are confined to flooring only. Over 45 plain and marbled colours of flooring are available and sponge-backed rubber flooring, which is specially suitable for use in cinema gangways, is also exhibited. [Stand No. H, 172.]

Durafencing, Ltd., specialising in supplying and erecting all types of fencing, have on view examples of various types of fencing. These include the normal range of galvanised and aluminium chain link fencing, with heights up to nine feet, chestnut pale fencing, and interwoven panels and wattle fencing. In addition to these types a small panel of close-boarded oak fencing is shown, this material being freed from materials licence last March. A number of photographs illustrating the variety of jobs recently undertaken are also to be seen. [Stand No. K, 204.]

An interesting feature of the stand of **Fibreglass, Ltd.,** is a "silence room," which houses a demonstration of "Fibreglass" insulation against structure-borne (as well as airborne) sounds. A trip hammer contrivance drops on to the roof of an enclosed booth in which the sound of the drop is rendered inaudible because of the insulating properties of the material. A window display shows a model house with the various forms of heat, cold, thermal and sound insulation that may be effected with "Fibreglass" while a second window illustrates the variety of uses to which "Fibreglass" is put in the building trades. Part of the construction of the stand is in a patent plasterboard—bitumen-bonded wool sandwich—which is claimed to be fireproof. [Stand No. L, 221.]

J. Gliksten and Son, Ltd., have utilised many specimens from their own hardwood concessions in British Honduras and the Gold Coast in the construction of their stand and these timbers are worthy of inspection, particularly those used in the panelled interior of the office on the stand. A range of fine veneers from various parts of the world and a number of panelled and flush doors are shown, the interior construction of the latter being of



Carter's Tile stand.

The John Thompson Beacon Windows stand. Designed by Carlludwig Franck, Dr.Ing. (Arch.).

interest to builders and architects, as it is designed to overcome the difficulties of warping, winding and the appearance of unsightly corrugations of the surface. Plywoods of interior and exterior grades, and "Hernite" hardboard and insulation boards, together with examples of softwoods now being imported, complete the exhibit. [Stand No. G, 130.]

The exhibit of **Highways Construction, Ltd.**, which incorporates the business of the **French Asphalte Co.**, shows some of the products which are laid in modern buildings and, in particular, a variety of flooring mastics. They indicate how the various coloured mastic asphalts and coloured pitch mastics can be laid in conjunction with aluminium T strips, a type of flooring widely used for flooring in houses, schools, hospitals, etc. Samples of the natural rock asphalt as mined, used in the firm's natural rock asphalt mastic and "Monophalt" mastics for roofing and asphalt tanking work, are displayed together with photographs of work being executed. [Stand No. B, 26.]

J. A. King and Co., Ltd., manufacturers of "Glas-crete" products, have endeavoured on their stand to show some of the varied forms in which this medium may be constructed. "Glas-crete" is divided into two main categories, horizontal and vertical constructions. Horizontal constructions include roof, pavement and floor lights, canopies, domes, barrels and lantern lights, while the vertical constructions comprise windows, stallboards, screens and partitions. Seven types of horizontal constructions cover the roof of the stand, and the front, back and sides illustrate eight types of vertical "Glas-crete" construction. [Stand No. F, 121.]

Liotex Asbestos Flooring Company, Ltd., show examples of their "Liotex" (Magnesite) flooring, in plain standard colours on the floor of their stand. Also to be seen are samples on wood foundations, concrete foundations and steel decking. "Liotex" floor polish, suitable for all types of composition flooring, is also demonstrated. [Stand No. 551, Gallery.]

✱ Door, window and screen panels, showing various forms of glass decoration in tones of acid embossing, sand-blasting, brilliant cutting, etc., are shown by the **London Sand Blast Decorative Glass Works, Ltd.** Also to be seen are decorated and convex mirrors, including surrounds in coloured plate-glass, bevelled and silvered; leaded lights and murals in "Vitrolite" glass. A new exhibit is an edge-illuminated sign, in deeply engraved Perspex material, using fluorescent lighting. [Stand No. G, 134.]

William Mallinson and Sons Ltd. are exhibiting a range of hardwoods, veneers, flooring, etc., but their display is largely devoted to examples of the products of their associate companies. They include metal-covered panels and doors in aluminium, stainless steel, bronze, monel metal, galvanised steel, zinc, etc. Examples of metal-covered flush doors, together with a full-scale section of an escalator staircase with teak-faced panelling on either side, are also displayed. Shown, too, is a range of plywood boards, faced "Warerite" and sections of hollow spars for boat-building. [Stand No. E, 91.]

✱ The island site occupied by the stand of the **North British Rubber Co., Ltd.**, contains a staircase, the steps of which are covered with rubber flooring of combined treads, nosings and risers in marbled green/blue/black/white. Emphasis of the exhibit is on rubber floorings, and many styles are on view in sheet and tile "Paraflor." One corner of the stand shows examples of "Supertex" domestic flooring—a suitable covering for concrete floors in modern houses. Each day demonstrations are staged showing the mixing and laying by trowel of this latex-cement floor covering. The display also includes examples of nosings, mats and hoses. [Stand No. O, 255.]

The main approach to the **Pilkington Bros.'** stand is from the Addison-road entrance, and a pair of "Armourplate" doors with flanking "Armourplate" panels is the first exhibit to be seen on approach from this direction. This feature is flanked by two curved panels of ¾-in. rough cast plate glass, which terminate on the underside of a projecting canopy. The flexibility of "Armourplate" is demonstrated by a machine which twists two pieces of ¼-in. "Armourplate" simultaneously through 45 deg., while the use of this glass in architecture and building is shown by a glass staircase having treads and balustrade in the material. "Vitrolite" is demonstrated in large panels in conjunction with mirrors, while painted, fired and toughened and other types of structural, decorative and roofing glasses are demonstrated in various ways. [Stand No. G, 133.]

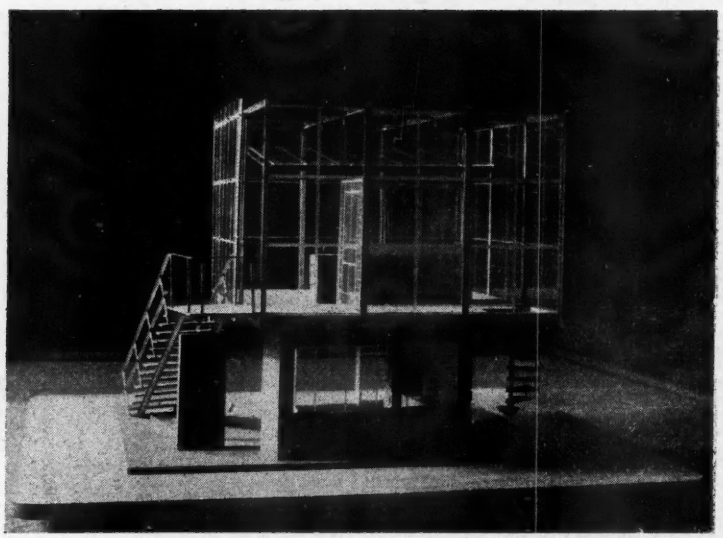
"Vitrolite" wall-linings as applied in the more exclusive designs of bathroom finishes are displayed by **D. W. Price and Son, Ltd.** This material, it is claimed, will not discolour, fade or craze and is not affected by steam, grease, etc. It is equally suitable for exterior work and climatic conditions do not affect it. [Stand No. T, 306.]

✱ **Joseph Sankey and Sons, Ltd.**, are showing examples of pressed steel floor frames and all forms of metal trim, *i.e.*, pressed steel skirting, picture rail, corner bead, window cills and window linings. [Stand No. C, 53.]

Tom M. Scotney, Ltd., are exhibiting both purpose-made and mass-produced joinery. On one end of their stand there is a section of a staircase, and on the other end is a display of kitchen units. They are also exhibiting various types of doors and windows of traditional and EJMA design. [Stand No. O, 252.]

The stand of **Semtex, Ltd.**, is of two tiers, and is designed to demonstrate the versatility of the range of floor-covering materials offered by this firm. The ground floor is devoted to a display of flooring in the new and improved "Semastic" decorative tiles. These tiles are more flexible, making for faster installation, and the surface is not impaired by the normal spillage of acids, alkalis and common solvents or by contact with oils and greases. On the second tier of the stand is displayed "Semastic" domestic tiles in two colours, brown-plain and brown-marbled. The stand also features displays of "Fleximer" floor covering, for use in hospitals, schools, offices and factories, and "P.V.C." tiles manufactured by Dunlop Special Products, Ltd., and installed by Semtex, Ltd., are on view in conjunction with D.S.P. adhesives. [Stand No. G, 129.]

Examples of joinery for general housing work are presented by **Sharp Bros. and Knight, Ltd.** A stormproof standard bay window forms the frontage to the stand office, which is enclosed on the other sides by a standard french frame, a built-in cupboard, a flush door and a standard S.B.K. dresser unit. Hinged to the outside office wall is a full range of standard panelled doors, to B.S.S., ENJO/SBK doors and flush doors with plywood or hardboard faces. A complete staircase, made for a current contract, and a display of modern kitchen fitments, with convenient cupboards, sink units and ventilated



The stand for Williams and Williams, Ltd. Arcon, Architects.

larder units, are also to be seen. The whole display is staged on a hardwood floor. [Stand No. P, 262.]

A comprehensive range of their "Seal" brand products are displayed by **Edward Tyrrell, Ltd.** These include chestnut pale fencing; driven chestnut spile fencing; steel chain link fencing (aluminium alloy or galvanised); steel square-mesh fencing, in 9-gauge wire, for cattle, pigs, etc.; wattle hurdles; interwoven panel fencing; close-boarded fencing; post and wire fencing, etc. Details are available of work carried out for the Government and local authorities in all parts of the country. [Stand No. 400, Gallery.]

A. Vigers, Sons and Co., Ltd., show on their stand a variety of flooring specialities, including examples of parquet, wood-blocks, hardwood strip, ¼-in. "Accotile," composition, cork, and rubber. Expert advice is available on the resurfacing of old floors. [Stand No. H, 168.]

Cement, paints, etc., plasters, building boards, laminated materials, waterproofers.

The stand of the **Alabastine Co. (British), Ltd.**, takes the form of three rooms—bedroom, dining-room and lounge—which will be decorated with "Alabascote," painted and glazed. Also on view are their "Alabascote" plastic colour and "Alabastine" filler. Technicians are in attendance to give individual demonstrations on methods of application. The rooms are furnished by William Whiteley. [Stands Nos. 427 and 429, Gallery.]

✱ Plastic paint, in thirteen pastel colours and white, can be seen on the stand of **Artex Products (Decorations), Ltd.** Hourly demonstrations are given in its uses and application, which includes the use of a spray gun. Also on show are a range of tools for use with plastic paint; Artex filler; and Artex plastic distemper. [Stand No. T, 311.]

The exhibit of **Lewis Berger and Sons, Ltd.**, is primarily devoted to the physical application of their Decorator products. Panels are displayed showing actual specimens of the various finishes obtained by brushing. These finishes include the following Berger lines: "Bergermaster" gloss enamel. The first of a series of copolymer surface coatings; "Bergermaster" satin flat enamel; "Pompeian" enamel paint; "Matone" flat wall enamel de luxe; and "12-star" enamel. "Germide," an antiseptic and germicidal paint, and a new product of this company, can also be seen on this stand, together with "Dusseal," a treatment for new plaster surfaces. [Stand No. Q, 276.]

A newcomer to the Exhibition is the **British Chipboard Manufacturers' Association**, whose stand is devoted to showing the applications of "Pernex," "Plimberite" and "Weyroc" boards in the building industry. The stand is, for practical purposes, entirely constructed of chipboard and examples of panelling, partitioning, flooring, cupboards, doors, furniture and the manifold other uses of chipboard are on display. Demonstration is made of apparatus by means of which chipboards are tested for their mechanical and physical properties. The output of these three members of the Association, British Plimber, Ltd., Jicwood, Ltd., and Pernex, Ltd., is equal, the Association states, to about 90 per cent. of the total manufacturing capacity of the chipboard industry in this country. [Stand No. 560, Gallery.]

The various types of "Stonite" wall finishing materials manufactured by **Callow and Keppich, Ltd.**, are displayed on their stand. A number of staggered panels show the standard colour range and the different textures obtainable. The possibilities of simulating ashlar work are also indicated, and "Stonite" pointing mortar is shown. The "Stonite" range comprises wall finishing materials for external use in this country, all of which are factory-made and ready for use without the addition of anything other than clean water. [Stand No. T, 303.]

Cellon, Ltd., are exhibiting on their stand a range of decorating materials of all types for the building and allied trades. In addition to "Cerrux" decorative finishes in gloss, satin and flat, "Cerrusco" water paint and "Cerrusco" texture paint are being shown, and also "Cerric" cellulose wood finishes. Externally, the stand shows examples of "Cerrusco" texture paint, with panels in gloss, satin and flat finishes, while the interior demonstrates modern interior decoration. The stand has been designed by Richard Levin, M.S.I.A. [Stand No. H, 171.]

✱The practical aspects of the "Edlac" paint range under every-day conditions are emphasised by **Ferguson Edwards, Ltd.** The exhibit is divided up into sections each representing a typical British house interior. The paints used in every instance are guaranteed by the manufacturers to have been taken from their stock shelves and have been applied on the stand by operators previously unknown to the company. In addition to the house sections the stand shows examples of the scientific application of colour to machinery and industrial premises. The company have a special industrial colour advisory department which gives free service to architects, surveyors and property owners alike. [Stand No. N, 242.]

✱"Flexoply," a waterproof plywood which forms the basis of wall panelling and faces of flush doors and other products, is manufactured by **Flexo Plywood Industries, Ltd.**, and can be seen on their stand. Wall panelling can be supplied faced with natural decorative veneer, anodised aluminium, "Warerite," etc., and can be supplied moulded to shape to meet such requirements as column cases, counter fronts for shops, canteens, cocktail bars, etc. "Flexoply" can also be used as the skins for flush doors, partitions and in insulation panels. Flexometal is plywood faced with a variety of sheet metals such as stainless steel, aluminium, copper, monel metal, anodised aluminium, bronze, galvanised steel—in fact, almost any metal, including sheet lead for X-ray screening. This product can also be seen on the stand. [Stand No. D, 82.]

✱**The Gotham Co., Ltd.**, are showing on their stand, which is constructed in their own materials, their range of "Thistle Hemihydrate Plasters," including a special plaster for use on metal lathing for suspended ceilings. They are also showing "Polar White" cement, a material for use in cold storage and refrigeration chambers. "Herculite," a hard plaster for use in pattern making, foundry casting, and all hard models, can also be seen on this stand, together with "Barytite" plaster, a barium plaster which can be used as a substitute for lead in normal installations. Also various grades of plaster of paris are shown under the brand name of "Pixie"; these include building plasters, fine and superfine casting plasters for moulding, and also for surgical and orthopædic work. [Stand No. N, 245.]

✱Granger's Solution (Grade 1210), which can be brushed or sprayed on to any porous wall, whether damp or dry, to waterproof it invisibly, is displayed by **Grangersol, Ltd.**, as is their Solution (Grade 125), a transparent proofing for walls in such a position or condition that a "filler" is required to hold back damp. "Mesowax," which waterproofs and preserves canvas to make it withstand tropical rain, is also shown. [Stand No. 477, Gallery.]

✱ A series of exhibits illustrate the use and properties of a range of fire-resisting building materials on the **Gyproc Products, Ltd.** stand. The exhibits include "Gyproc" wall and ceiling board, lath (plaster base) and plank. The "Gyproc" range of "Gypsum" plasters—"Paristone," "Glastone," "Gypstone," "Cretestone" concrete bonding plaster, "Gyproc" Metropolitan stucco and "Gypklith" products and systems are also to be seen. Unit construction products and systems include the "Gypstele" system of wall linings, partitions, and ceiling constructions, "Plaxstele" suspended ceilings, "Gyproc" laminated partition slabs, and the "Gyproc" 2-in. solid partition. [Stand No. K, 201.]

A variety of "Sirapite" and "Belpite" plasters are featured by **The Gypsum Mines, Ltd.** The outside of the stand consists of plastered surfaces left undecorated. Inside the stand shows plasters on various partition with different backings and finishings. [Stand No. S, 293.]

A feature in the display of **Gordon Hesketh** is their range of specialists' brushes, including floggers, overgrainers, stipplers, set in bakelite and polished sycamore (each brush with two interchangeable handles), softeners, writers, liners, etc. In addition they are showing all types of varnish, distemper and other industrial brushes, as well as brooms, bannisters, hand brushes, and all household brushware. [Stand No. N, 248.]

✱An exhibit of unusual interest is that of **B. Heyman.** It comprises a portable hand-roller which, when rolled over walls or ceilings applies (1) plain coatings in place of brushed distempers and paints; (2) designs of any description straight on to walls and ceilings; and (3) raised effects of any shape in any desired colours. The latter process has been developed since the last Exhibition. The tool does not require any special skill or training to use and the tools and accessories are shown and demonstrated on the stand together with a wide range of sample works. [Stand No. 541, Gallery.]

Hickson's Timber Impregnation Co. (G.B.), Ltd., demonstrate modern timber preservation, with vacuum-pressure impregnation utilising the "Wolman" (R.T.M.) range of "Fluorehrome" timber preservatives for the treatment. Specimens of various timbers impregnated with "Wolman" salts are exhibited. [Stand No. E, 96]

✱**Jicwood, Ltd.**, are including in their exhibit examples of their "Weyroc" man-made timber showing various applications, and they have an operative with a fretsaw showing how the timber can be worked. They are also introducing a unit constructed of laminated timbers showing how this form of construction can be used in the building industry. The stand is constructed throughout with "Weyroc." [Stand No. 433, Gallery.]

An exhibit by **Martin Lawton, Ltd.**, is a range of "Lawmar Set" brushes for the building trade. All sizes of paint and distemper brushes are exhibited from ½ in. to 7 in. in various grades and qualities. There are many new features and improvements incorporated in the display. Martin Lawton brushes are now vulcanised with "Lawmar Setting," a special process which gives a brush for which is claimed: No loose hairs; a setting which will not crack or break; and an imperviousness to soaking in anything in which a normal paint brush is immersed. [Stand No. 498, Gallery.]

Paint Removers, Ltd., a subsidiary company of Vulcan Products, Ltd., are giving continuous practical demonstrations of their product, "Offkwik." This paint remover is effective for stripping paint, varnish, synthetic enamel, cellulose lacquer and stoved enamel, and if applied according to instructions is non-inflammable, non-corrosive and non-toxic. [Stand No. B, 39.]

✱As in previous exhibitions, **Ronuk, Ltd.**, have devoted their stand to demonstrating the services and materials of their polishing contract department. The stand itself is constructed in stained and polished oak. Since the last exhibition this firm have restored their range of "Colron" shades to the 12 which they were marketing before the war and have introduced a new half-pint size tin. [Stand No. F, 118.]

Concrete waterproofing, dustproofing and hardening materials of all kinds are shown on the stand of the **Sal Ferricite and Trading Co., Ltd.**, including specimens of their metallic floorings for resisting heavy traffic on roads, garages, warehouse and factory floors, coloured floorings in various shades, and products connected with the treatment of concrete for rendering it waterproof, grease-proof, hard wear resisting, etc. Four grades of Sal Ferricite liquids are shown, the liquids Nos. 1 and 2 being used purely for waterproofing purposes, and liquids Nos. 3 and 4 for special purposes related to the protection and curing of concrete. Sal Ferricite concrete paints can be applied direct to new concrete without primers or pre-treatment, and can be supplied in most colours. [Stand No. B, 36.]

✱ "Silexine" stone paint and "Silexine" plastic emulsion coating, a new decorative material, are shown by **Silexine Paints, Ltd.** The firm state that the plastic emulsion coating can be applied direct to all wall surfaces without the use of special sealers, or primers. It dries in one hour, can be re-coated within three hours, leaving no unpleasant odour, and within 72 hours of application it can be scrubbed. [Stand No. H, 170.]

✱ A complete range of decorators' products is exhibited on **Sissons Brothers and Co., Ltd.**, stand, including "Hall's" distemper, "Sissons" water paint, "Bonoglos" bright gloss paint, "Flatomur" flat wall finish. These and other materials of Sissons Brothers' varied range of products are formulated to incorporate the latest technical advances in manufacture. [Stand No. P, 266.]

The stand of **Stramit Boards, Ltd.**, incorporates a range of full-size applications of the 2-in. Stramit slab, which can be used for partitioning, roofing, and flooring. To demonstrate the manufacturing process, a display of photographs show how farm straw is compressed under heat by the Stramit process to a 2-in. thick building slab 4 ft. wide, which can be supplied to any required length, and which possesses many of the properties of timber. The stand also includes the "Lindoco" doors and the "Carda" windows manufacturered by Linden Doors, Ltd., an associate of Stramit Boards, Ltd. [Stand No. R, 288.]

The **Tentest Fibre Board Co., Ltd.**, are exhibiting their fibre building board products, including "Tentest" insulating board and masonite hardboards, together with their specialised construction department's wide range of fittings for fixing lining boards to steel-framed structures. An interesting new product is a concealed fixing system based on sound structural and mechanical principles, which is suitable for work where exposed metal cover strips are not desired. [Stand No. F, 119.]

The stand of **Charles Turner and Son, Ltd.**, is decorated with their standard materials only and by ordinary decorators. On show are a number of their products, including Glynto enamel, Charteriac enamel, Charter flat oil paint, anti-rugine metallic paint, Charter aluminium wood primer, Bloomsbury hard gloss, and the full range of Turner varnishes. Among the additions to their range exhibited are Charter stone paint, made from stone and Charter metallic paint in gold, copper, bronze, etc. Also Sunglynt enamel, an enamel based on Alkyd resin. [Stand No. D, 77.]

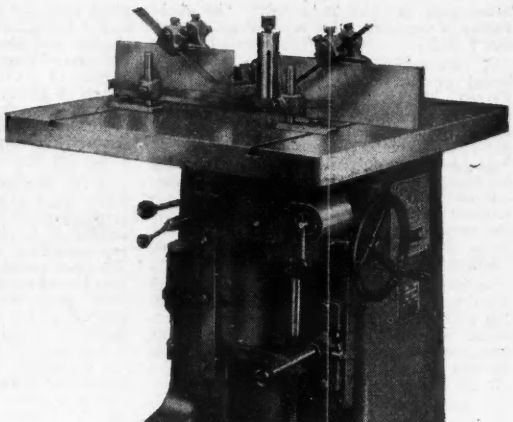
The **Warerite, Ltd.**, stand demonstrates the value of "Warerite" panels and veneered board for the interior treatment of hotels, restaurants, bars, shops, hospitals, public buildings, ships and railway cars. A wide range of patterns and plain colours can be seen on this stand and includes "Warerite" weave, a patterned material with a hard scratch-resistant surface. Corner displays of the stand comprising a seating alcove, a reception area, a bathroom and a bar dispense unit, make extensive use of "Warerite" veneered board. The bar dispensing unit suitable for hotels and public houses shows the value of "Warerite" laminates for applications where resistance to spilt alcohols is important. [Stand No. D, 73.]

✱ Decorative hardwood veneers in their natural form and as polished panels used in hotels, ships, public buildings, etc., are exhibited by **John Wright and Sons (Veneers), Ltd.** Over 72 different woods are on view. [Stand No. 512, Gallery.]

Woodworking machinery.

✱ **A. Cooksley and Co., Ltd.**, are featuring a number of items from their range of woodworking machinery which includes a self-contained motorised 9-in. surfacing machine, together with a motorised hollow chisel mortising machine; an overhead belt sander, having either 6-ft. or 8-ft. tables; a pull-over crosscut saw and selected types from a range of sawbenches, starting with the smallest 9-in. dimension sawbench, type LOH, to the largest fully motorised 32-in. push-feed unit. A general woodworker, type LBN, which is now slightly modified, including the provision of two motors, and a number of new additions to the Cooksley range are also available for inspection. [Stand No. G, 144.]

The "Diamond" cutter grinding machine, a new self-contained bench-model that will take care of solid profile cutters with both straight and shear cutting teeth and cutter knives, is being exhibited by **J. K. O. Cutters, Ltd.** Also on view is their "Electro-tempo" automatic feed attachment for conversion of woodworking spindle moulders, saw benches, overhand planers, routers, etc., into semi-automatic machines. The "Electro-tempo" is driven by a .75-h.p. electric motor driving a 4-speed gear box, giving a range of speed feeds from 15 to 90 ft. per min. They are also showing solid profile cutters, manufactured in special alloy steel with teeth of inserted tungsten carbide. [Stands Nos. 490 and 492, Gallery.]



Type GM spindle moulder. A. Cooksley and Co., Ltd.

Dominion Machinery Co., Ltd., are exhibiting a full range of their woodworking machinery, including their Model and Super Elliot woodworkers which do the work both with and across the grain. The Model Elliot woodworker will rip, crosscut, surface, mitre, mould, bore, rebate, chamfer etc., and the Super Elliot woodworker will, in addition, surface and thickness up to 24 in. by 9 in., according to the size and type of the machine installed. A new tenoning machine is also being exhibited complete with top and bottom scribers and cut-off saw. In addition, a new type surfacer and thicknesser is on view together with a new spindle moulder, a chain and chisel mortiser, a band saw, and a new 6-in. bench surfacing machine. All these are self-contained with their own motor drive. [Stand No. H, 151.]

✱ **Interwood, Ltd.**, will be showing an electric hydraulic press, a panel shaping and veneering press and a manual-operated veneer press. Also a veneer edge-to-edge joiner and a manual-operated veneer guillotine, an essential tool in every veneer shop; an electric glue spreader for the automatic, cold spreading of synthetic resinous glues and a glue mixer for the rapid mixing of these glues; a saw sharpener for band, frame and circular saws up to 40 in. in diameter; and a heavy-duty universal electric high-speed router with 360-degree swivelling, canting head. Also a range of veneering tools, including trimmers, taping apparatus, veneer punches and electric veneer hammers are on view. [Stand No. F, 107.]

✱ **The Kiné Engineering Co., Ltd.**, manufacturers of the "Multico" range of portable power cutting machines, will be showing their portable circular saw bench and multi-purpose machine, which has a 10-in. blade, with 3½-in. depth of cut—of all-steel construction with tilting table. It will rip, groove, tenon, rebate and mitre, and has attachments for drilling and grinding. It can be used for tile cutting with special blades. A new 12-in. circular saw bench, and a 6-in. planer of cast iron construction, are both products which have been placed on the market since the 1947 Building Exhibition. All of the above exhibits can be either petrol or electrically driven. [Stand No. 536 Gallery.]

✱ **The Midland Saw and Tool Co., Ltd.**, are showing on their stand a 9-in. "Midsaw" universal woodworker, a 30-in. wood band-saw machine, a 26-in. saw bench, and an overhead cross-cutting machine. The "Midsaw" universal woodworker and overhead crosscutting machine are under power and can be demonstrated. [Stand No. H, 156 and J. 195.]

The Palmer portable "Cross-Rip" saw, a new product of **W. T. Palmer and Co., Ltd.**, can be seen on their stand. The machine is powered by a petrol engine enabling it to be put to work within 15 minutes of arrival at any site. It can straight cross-cut 16-in. by 4½-in. timber and can deal with 11-in. by 3-in. timber when cutting at a 45 degree compound angle. In addition, it can groove, rebate, tenon, etc., and it can be quickly converted into an orthodox rip saw with rise and fall action. The timber table is 5 ft. long and 1 ft. wide. Also on show are two other new products, the "Startrite" 18-in. band-saw and the "Startrite" 8-in. saw bench. [Stand No. 503, Gallery.]

✱ A range of "Pickles-Ransomes" saw-mill and woodworking machinery is being exhibited by **John Pickles and Son (Engineers), Ltd.** This includes a large horizontal log handsawing machine, fully motorised and with variable hydraulic feed gear; an automatic saw-sharpening machine for dealing with bandsaws up to 8 in. wide; a motorised straight line edger of heavy design, giving a large capacity for wide stock; and a complete universal woodworker capable of performing practically all woodworking operations, the sawing and planing and thicknessing portions being driven from independent motors, allowing both parts of the machine to be used at the same time. Other operations include tenoning, boring and mortising with square hollow chisel, crosscutting, moulding, bevelling and chamfering. [Stand No. F, 105 and S, 147.]

✱ An under-driven roller feed saw bench (type XF) used for ripping, bevel sawing, deep cutting and general work, is displayed by **Thomas Robinson and Son, Ltd.** It is fitted with a new sensitive pressure-applying mechanism for feed rollers, and has a foot pedal control. A newly-designed machine on view is the 30-in. patent motor-driven band saw (type YD/T), and a new general purpose surfacing and thickening machine to be seen is the self-contained motor-driven combined hand and power feed planer (type WR/T). It takes timber up to 24 in. wide by 9 in. deep. A standard motor is housed within the machine frame, and a short centre endless belt drives from motor to both cutterblock and feed. [Stands Nos. H, 155 and 149.]

✱ A range of new machines which have not previously been shown to the public can be seen on the stand of **J. Sagar and Co., Ltd.** These include an under-driven circular saw bench; a vertical spindle moulding machine; a chain and hollow chisel mortising machine; and a 60-in. triple drum sand-papering machine. Also exhibited are a roller feed panel planing and thicknessing machine; a "Premier" under and over planing and thicknessing machine; and a four-cutter moulding and planing machine. [Stand No. H, 153.]

Sagar (Developments), Ltd., are exhibiting a 9-in. snipper cross-cut saw; a 16-in. band-sawing machine, which will cant to 45 deg.; a vertical spindle moulding machine; a 12-in. tilting arbor saw, which has a maximum cutting depth of 3½ in. and a table 24 in. by 30 in.; a planing and thicknessing machine; and a universal cutter grinder. This machine has attachments for lapping tungsten carbide-tipped circular saws, for square and circular cutter blocks, for grinding multi-wing solid profile cutters, and for planing cutters. Two nailing machines are on show, one automatic and the other a single head, and also being displayed is a complete range of tungsten carbide-tipped saws and tools. [Stand No. 438, Gallery.]

* A new straight line edger, on show for the first time, can be seen on the stand of **Stenners of Tiverton, Ltd.** This machine has the saw mounted below the table as in a normal saw bench, giving a downward thrust of the material being sawn on to the chain bed. The saw is made to rise and fall by a handwheel and has motor built on the spindle. A brake is provided and the chain bed is driven by a four-speed motor with controller placed at front of table. Another item on show is an over and under planer, which has a thicknessing capacity of 24 in. by 9 in. and a surfacing capacity of 27 in. wide; a 30-in. bandsaw, a canting spindle dimension saw bench of large capacity; a vertical spindle moulder; and an interchangeable chain and chisel mortiser, which has a lift-off table enabling doors and frames to be mortised. [Stand No. F, 106.]

* **Wadkin, Ltd.** have two separate stands. The main stand, No. H, 154, is devoted to the higher production type machines, among which are two sizes of high-speed electric planing and moulding machines. One is a 4-in. by 4-in. machine, and the other is a 7-in. by 4-in. machine. Both are post-war designs and are on show for the first time. Other machines on show include a hydraulic cross-cut saw, a power re-saw, a high-speed router, a spindle moulder, and also two new types of grinding machines; a universal grinder for use with planing and moulding equipment, and a plane iron grinder for thick or thin planer knives up to 36 in. long. On Stand No. L, 227 is a selection of standard joinery machines, namely, a pull-over crosscutting and trenching machine, a combined surfacer and thicknesser, a 30-in. saw bench, and a chain and chisel mortiser. [Stands Nos. H, 154 and L, 227.]

Wilson Bros. (Leeds), Ltd., are exhibiting 10 machines of their latest post-war designs. All are of the self-contained motorised models, and can be seen in operation. These will include a model WTK universal woodworker; a 20-in. by 9-in. model KHE/F hand- and power-feed surface planing and thicknessing machine; a 24-in. by 9-in. model JMS/T roller feed panel planing and thicknessing machine; a model TBA single ended tenoning machine; a model CMM chain and hollow chisel mortising machine; a model MHC vertical hollow chisel mortising machine; a 22-in. model JQE circular saw bench; a model LOU straight line cross-cut saw; a 30-in. model DGM/F high-speed band-sawing machine; and a model FVH/J vertical spindle moulding and shaping machine. [Stand No. G, 146.]

Wood Preservatives and Miscellaneous.

The stand of **Jenson and Nicholson, Ltd.** Pest Control Division, illustrates the uses of "Cuprinol" wood preservatives for building purposes. Exhibits show the insecticides and fungicides included in the complete "Cuprinol" range of grades for timber, textiles, ropes and cordage. Emphasis is placed on treatments for all climatic conditions and for resisting attacks by boring beetles and dry rot, and a feature of note is "Fumite" vapour fumigant which, when emitted by "Fumite" generators, is particularly suitable for treating inaccessible affected areas. [Stand No. S, 295/6.]

The Midland Bank provide banking facilities at the exhibition, and its representatives are available to assist on all matters concerning the special banking services available for those who trade or travel abroad. With more than 2,000 branches in England and Wales, and with over 16,000 banking agents abroad, the Midland Bank is able to offer a complete banking service. A news service machine is installed at the Exhibition branch for the convenience of exhibitors and visitors. [Stand No. A, 8.]

Examples of the finishes produced by the undermentioned enamels, paints, etc., are displayed by **Thomas Parsons and Sons, Ltd.**: "Endelline" enamel for interior and exterior use which produces a washable porcelain-like finish; "Endelflat" a flat enamel for interior use; "Unicote" flat oil paint, a ready-for-use paint, producing a flat finish upon wood, plaster, wallpaper, metal, glass, etc.; "Parso-Glaze," suitable for obtaining shading and broken colour effects; "Parsons' Water Tex," a powder for mixing with water to make a plastic compound for producing decorative effects in a variety of textures or designs in low relief; "Parso-Stone," a paint that provides a stone-like finish for inside or outside use; "Cork-Tex," a condensation preventative; "Chexrot" wood preservative; "Phaltic" bituminous paints, and "Parsonloid" metallic lacquers. [Stand No. F, 120.]

Pestcure, Ltd., present a comprehensive display of the solutions they manufacture to act as agents against dry rot, wet rot, death watch beetle, furniture beetle, lyctus beetle, and termites. Teams of trained technicians are available to carry out the firm's methods of eradication and treatment, and information regarding these is available at the stand. [Stand No. 408, Gallery.]

"A device for every type of fixing" is claimed as a true description of the range of Philplug fixing devices demonstrated by **"Philplug" Products, Ltd.** "Screwfix" dispenses of the need for accuracy to obtain a secure fixture. The material, which is made from asbestos fibres and cementatious powders, is moistened and rolled in the hands to form a plastic plug to fit any shape of hole. With a supply of this material it is possible to fix the complete range of wood screws. "Philplug" tools include a diamond-point drill for boring holes in the hardest masonry, while the new "Tilefix" is useful in refixing loose tiles, and may also be used for "making good" cracks in plaster. There is a wide range of fixing products on view. [Stand H, 159.]

* The stand of **Rentokil, Ltd.** demonstrates the penetrating powers of Rentokil Timber Fluid for woodworm destruction, and the Rentokil Dry Rot Fluid, by means of ultra-violet light—a novel and ingenious method of showing this important quality. Also the Rentokil Injectors are demonstrated and the new model of the "Junior" Injector, incorporating the non-return valve in the head, is available for inspection. The new model of the "Fetcham" Injector for use by builders, is a serviceable instrument and will doubtless commend itself to all who carry out repair work in woodworm-infested buildings. [Stand No. 406, Gallery.]

Richardson and Starling, Ltd., are displaying dry rot and death watch beetle control materials. Specimens of timber attacked by various forms of dry rot fungi and wood-boring insects are exhibited and the modern methods of control explained. Experts are available to advise on the identification and eradication of timber decay in buildings and explain the use of the latest chemicals "Reskol" and "Wykamol." Photographs are shown of the treatment of the great timbers in Winchester and Chichester Cathedrals and in other famous buildings. [Stand 550, Gallery.]

Two new products are being shown by **Roneo, Ltd.** for the first time at the Building Exhibition. The new Roneo "500" Series II marks a step forward in duplicator design and is fitted with a special inking system to give at least twice the number of copies per pound tube of ink. It also enables double-sided work to be produced without interleaving on all normal duplicating paper. The Roneo "150" is of entirely new design and is the only portable duplicator with fully automatic inking and feeding. [Stand No. 409, Gallery.]

* Reading and measuring instruments of every kind and description used in the building industry and architectural and surveying professions are to be seen on the stand of **W. F. Stanley and Co., Ltd.** The exhibit comprises a comprehensive display of theodolites, levels, drawing instruments, and surveying equipment. Special attention is drawn to the "Contractors'" theodolite and also to the U500 "Builders'" level. [Stand No. 518, Gallery.]

* Engineering specialities form an interesting display on the stand of **Thomas and Bishop, Ltd.** Among the exhibits are "Flexo" belt treatment for conditioning belts and ensuring efficient transmission; "Permac," a metal-to-metal jointing for leakproof joints for steam, gas, water, petrol, etc; "Flexo" tinning compound, for cleaning and tinning dirty metals in one operation; and "Tebeon" roofing compound, for waterproofing and weather-proofing roofs. [Stand No. K, 202.]

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Building Apprentices Rowing Club

THE Building Apprentices Rowing Club was formed in 1946 and has had a most useful career. The latest achievement of the club was winning the National Amateur Rowing Association Head of the River Race in 1949, having been second in 1948.

The Linden Rowing Club (J. Lyons and Co., Ltd.) have in the past very kindly helped the club by lending boats, but now the Apprentices are proposing to buy a boat of their own, a clinker eight. The Apprentices pay all their own rowing expenses, including regatta entrance fees and travelling. In addition, they have raised over £200 for the new boat. They still want another £150.

To raise this they are running a Crossword Competition at the Building Exhibition for which Mrs. Hugh Montgomery has kindly given the prizes. The Rowing Club Stand will be found in the Gallery of the National Hall (adjoining Stand 511). For 1s. or more invested in the club's funds, subscribers will get a chance to take part in the competition, and may even win a prize!

The prizes are £15 15s., £10 10s. and £5 5s., and there are 20 consolation prizes of £1 1s. each and 10 Tombola tickets of £1 1s. each.

IN PARLIAMENT

War Damaged Sites

IN the House of Commons on November 8, MR. BEVAN, Minister of Health, moved the second reading of the War Damaged Sites Bill. He said that the Government had come to the conclusion that the time had been reached when it was necessary to arm the local authorities with more power than they now had to deal with them. It was contemplated that the local authority should have the right to acquire the sites by negotiating the lease or by compulsory possession. For compulsory possession they must get the consent of the Minister.

He knew that it would be one complaint of the Bill that the local authorities would not be obtaining any special grant from the Exchequer for this work. This was a defect quite often found in Bills of this sort, but where local authorities carried out work which would form part of the compensation which would be given by the War Damage Commission to any private owner carrying out similar work, then the local authority would attract that amount from the Commission. In addition, where a local authority attracted rate equalisation the Exchequer would assist in this activity like all others. Further than that it seemed unreasonable to go because this was a purely local service from which local citizens, in the main, would benefit. Massive works were not contemplated because, obviously, possession of sites for a short period involving large expenditure could not be entertained.

With the limitation on capital investment extensive work could not be contemplated, but there was obviously much ugliness which could be cleared up at very little expense.

MR. DEREK WALKER-SMITH said the right thing to do, on any long-term basis or comprehensive view of the problem, was to get the right sort of redevelopment proceeded with as soon as possible, to provide a permanent solution to the problem. But these processes were necessarily retarded by the cut in the capital investment programme, and so, in that state of affairs and with the Festival of Britain looming ahead, they had this Bill, which, on a long view, could only be considered a patching-up Bill, and must not be a concealment of the real problem that lay ahead. He complained that on a local authority's interpretation of the vague word "amenity" people might lose their property.

MR. BEVAN: No one will lose his property under the measure. The fact that the site is unoccupied means that the owner of it is unable to obtain permission to develop it, and, therefore, he is losing nothing at all. All the Bill does is to occupy a vacuum.

MR. WALKER-SMITH replied that before this could happen the owner would have had to get a planning permission and convince the Minister that he would proceed without delay, and in order to proceed without delay he would have also had to get a determination of development charge under the Town and Country Planning Act from the Central Land Board and have convinced them that he had a sufficient interest in the land to carry out the development. In short, the owner was in a complete *impasse*. When this Bill was on the Statute Book it would give a great deal of trouble in its interpretation and construction. The Opposition agreed with the broad principle in it. In such circumstances, Mr. Bevan should take a reasonably detached view of the various points raised by members, and undertake to consider them so that the Bill would emerge from the Committee stage in a condition less open to doubt and contradiction.

The Bill was read a second time.

Scottish Housing Cuts.

On November 1, MR. WOODBURN, the Secretary of State for Scotland, outlining the Government's economy plans for Scotland, said that he was satisfied that considerable reductions in the price of houses could be achieved, and he proposed to effect savings by permitting a larger proportion of three-apartment houses in accordance with local needs and desires and by accepting certain proposals for modifications in design. He must also withdraw the relaxations he made recently in regard to the issue of private licences. By this means he hoped that there might be no obstacle to the building of the largest possible number of local authority houses.

MR. ELLIOT asked if the 25,000 cut in housing estimated by the Chancellor of the Exchequer was not to apply in the case of Scotland.

MR. WOODBURN said that the cut mentioned by the Chancellor of the Exchequer was a financial cut. It was, for the purpose of convenience, converted into what it meant in terms of housing. It did not necessarily mean a reduction in housing, but a saving in housing. The question as to how the saving was made must be left to be worked out in regard to each case.

London Airport.

MR. LINDGREN, replying to Mr. Beswick on November 2, said that from early 1946, when the London Airport was taken over from the Air Ministry, to its completion as a dual runway airport with terminal buildings, maintenance services, hangars and workshops so far planned, the capital cost of works services had been provisionally estimated at £26,000,000. This did not include money previously spent by the Air Ministry on the cost of purchase of land, diversion of roads or the reprovision of houses. By the end of September, 1949, approximately £10.5 millions had been spent on works, including £2.75 millions by the Air Ministry during the war. In addition, land had been purchased to the value of £455,000. Later, as traffic developed, a further system of runways would be required.

The Building Cuts.

On November 2 and 3 the House of Lords debated the Government's proposed economy cuts, and eventually defeated the Government by 116 votes to 29. LORD SWINTON, in moving the Opposition amendment, which was carried, severely criticised the building cuts. One of the most healthy and attractive forms of investment, he said, was for a man to buy his own house. The whole of the building society machinery was well designed to give the householder that opportunity. If they eliminated the private builder and the building society they killed that form of investment.

Budget and House Purchase.

MRS. JEAN MANN asked the Chancellor of the Exchequer if he was aware that the purchase price of houses for sale with vacant possession was still increasing, and that cessation of building houses for sale was encouraging still further increases; and if he would now take steps to recover for the national Exchequer some of the profit derived therefrom.

MR. JAY, who replied, said he was not prepared to anticipate the next Budget statement. [November 10.]

Private Building.

MR. BOSSOM asked the Minister of Health as there were approaching a million more people on the waiting lists of housing authorities to-day than when the present Government took office, if he would reconsider his decision to stop all private house-building.

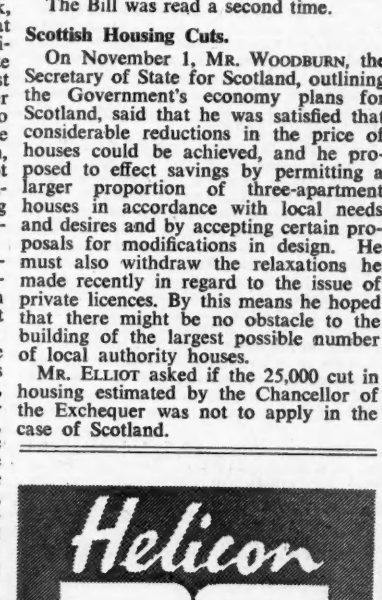
MR. BEVAN said the suspension of private house-building licensing was designed to enable the maximum number of houses to be built by local authorities for letting to those most in need. [November 10.]

Local Authority Housing.

MR. BEVAN, replying to Mr. Platts-Mills, said that building costs were not rising, but he was aware of cases in which local authorities had found their original proposals unduly expensive: it was his policy to give them every assistance so as to combine economy in building costs with the maintenance of proper standards of construction and accommodation. [November 10.]

THE A.B.S. TOMBOLA

THIS year the Architects' Benevolent Society embarks upon its hundredth year of helping architects and their families in need, and it is hoped that the Tombola to be held at the Building Exhibition will raise a thousand guineas to further this fine work. To do this a thousand prizes are needed, for every holder of a guinea ticket receives a prize. The A.B.S. would like to receive drawings, etchings, books, china, modern or antique works of applied art or anything which someone would like to win as a prize. These should be sent to the Secretary, A.B.S., 66, Portland-place, W.1, as soon as possible.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H.W.49

TIMBER FOR HOUSING

M.O.H. Economy Circular

DIRECTIVES on economy in the use of softwood and the use of plywood and of hardwood, joinery and doors; and a reference to the modification of plywood licensing procedure are contained in Circular 100/9, issued over the signature of Mr. H. Symon, of the Ministry of Health.

Economy in the use of Softwood.

The supplies of softwood timber for some time to come will be smaller than at any time since the end of the war and it is essential as never before that they should be used to the fullest advantage. With this in view, the Economy Memorandum first published in February, 1947, has been revised and copies will shortly be available for the use of the housing authorities and their officers. Whilst the Memorandum refers to the uniform allowance for housing of 1.6 standards of softwood per thousand superficial feet of floor area, the introductory note makes it clear that if all the economies mentioned therein are fully implemented a smaller allowance would be adequate.

The Timber Economy Memorandum gives guidance on methods by which softwood can be saved:—

First by not using softwood timber at all for certain specified purposes;

Secondly by using structural members of the most economical dimensions spaced at no closer intervals than is absolutely necessary;

Thirdly by curtailing the dimensions of non-structural items;

Fourthly by forethought in design and choice of alternative or complementary materials, such as hardwood.

In Appendix I of this circular attention is drawn to some particular economies. Also, for the guidance of designers, an estimate has been made, in Appendix II, of the usage of softwood in a typical house of 1,032 superficial feet (including outhouse and covered way); each item is shown in detail on the assumption that softwood is used throughout according to the recommendations of the Economy Memorandum. Materials other than softwood are often specified for certain purposes, as current supplies or design permits, and Appendix III shows what approximate quantities of softwood would then not be needed.

The circular adds: While the Minister does not propose formally to reduce the allowance of 1.6 standards per house of 1,000 ft. super he will in future look to the Council, to their contractors and to private builders to regard it as a maximum to be applied for only in exceptional cases. He requests that future applications for softwood licences for the construction of new houses should be reduced to the absolute minimum required for each particular design and specification. Such applications should quote the total quantity of softwood required per house and state whether or not materials or methods have been specified similar to those described in Appendix III to this circular. It would be convenient if local authorities would submit, with new tenders for approval, their contractors' agreed bulk requirements for softwood per 1,000 sq. ft. of area.

The Council and private builders should also consider what further economies in the use of softwood can be made in the houses they have already in contract or under construction. It is appreciated that the design of houses actually in course of erection cannot be fundamentally altered, but, where timber is not yet ready for delivery, immediate study should be given to any practicable changes in specifications which can be the subject of simple variation orders. Some immediate contribution of this kind is essential.

Applicants for building licences for works of repair, alteration, adaptation, etc., to existing dwellings should ensure that their proposals for the use of softwood conform with the recommendations of the Timber Economy Memorandum. The Council when considering the issue of a building licence in such cases should have in mind that the specification submitted by the applicant or his builder should provide for the most economical use of timber. In present circumstances recipients of building licences should be warned that the quantities of timber to be made available for works of repair, etc., will be kept to the minimum and that accordingly, in their own interest, they should await the receipt of the timber licence from the Department before work is begun.

Increased use of Hardwood.

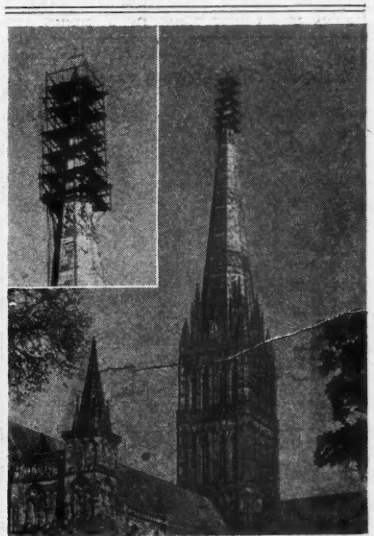
Most hardwoods are now free from control and the joinery industry is preparing to use them in an enlarged range of cupboards, fitments and doors suitable for housing. The use of hardwood in this way would help to ease the demand for softwood and local authorities should consider fitting some of their houses with hardwood joinery, although it will be more expensive than softwood. Private builders should also consider the use of these fittings in houses to be erected under licence; the additional cost should be included in the value of work licensed and therefore reflected in the maximum selling price fixed as a condition of the licence.

Increased use of Plywood.

Supplies of plywood have improved sufficiently to permit the withdrawal of some of the current restrictions on its use. Joinery and door manufacturers will arrange to place on sale kitchen fitments, cupboards, etc., embodying plywood for all the purposes for which it is normally considered suitable. Arrangements have also been made for the manufacture of plywood-faced flush doors to be re-started and such doors will shortly be placed on sale through the usual channels.

This improvement in supplies also permits a simplification of the licensing procedure which has been introduced as from November 14. From that date it will no longer be necessary for builders or local authority direct-labour organisations who purchase factory-made doors, staircases, cupboards, kitchen fitments, etc., to apply to the Ministry for a licence to cover the plywood incorporated in these items. Any softwood used in making them will still need a licence which builders must continue to pass to the joinery and door manufacturers. The plywood required will be supplied to the manufacturers on bulk licences issued direct.

This simplified licensing procedure will not apply in the case of builders or local authority direct-labour organisations who themselves manufacture some or all of their own joinery fittings and who are not entitled to a bulk allocation of plywood. Plywood licences in such cases should be applied for as before but the maximum amount normally allowable will be 400 sq. ft. per house. Where a licence for a substantial quantity of plywood has been granted to a builder and the licence utilised in full, joinery and door manufacturers will be precluded from accepting the softwood portion of the licence against any orders for doors, joinery fitments, etc., that the builder may subsequently wish to place. The Ministry will consider favourably any application for a supplementary licence for plywood particularly if it is to be used as a substitute for softwood. Such extra licences will normally be issued only for British-made plywood.



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APPENDIX I

Particular Economies in Softwood

(1) Softwood should be saved by not using it for the following purposes: bargeboards, porches and canopies, roof boarding under slates or tiles, fascia boards, eaves soffits, sprockets and tilting fillets, window boards and reveals, picture rails (other than in living rooms), draining boards, solid bridging, coal boards, wall plates for first floor joists, tank casing, and fencing.

Consideration can no longer be given to the use of softwood boards on solid ground floors except for bedrooms in bungalows and on the ground floors of blocks of flats. The supply of surfacing materials for solid ground floors elsewhere is now fully adequate to meet all demands.

(2) Softwood will be saved by using the most economical spacing of joists, rafters and purlins in relation to the sizes available, thickness of floor boards, etc. Table I of the Economy Memorandum gives full details but attention is particularly drawn to the following points:

(*a*) First-floor joists, ceiling joists and rafters 1½ in. sizes instead of 2 in., as supplies permit.
(*b*) Ridges—¾ in. × 5 in. instead of 1 in. × 6 in. or greater.
(*c*) Hips—1 in. × 7 in. instead of 1½ in. × 6 in. or greater.
(*d*) Tiling battens—under 18 in. centres — (¾ in. × 1 in.) : 18 in. centres or over—(1 in. × 1 in.).
(*e*) Flooring, ¾ in. nom. and ⅞ in. nom. instead of 1 in. nom., as supplies permit.

(3) Economy will result if provision is made at the design stage.

(*a*) For the strutting of roof purlins from load bearing partitions on the upper floor [see Memorandum paragraph 5 (*a*) (iii)] :
(*b*) For the use of the lowest satisfactory roof pitch consistent with the roofing material chosen, *i.e.*, 40 deg. for plain tiles and 35 deg. for interlocking single lap tiles [see Memorandum paragraph 5 (*a*) (ii)].

The longer lengths of rafters and joists are difficult to obtain and particular attention should be given to planning houses which require as few pieces over 16 ft. long

as possible. Long lengths should not be specified or used to cover double spans if two shorter lengths could be used, even though a slight overlap at the intermediate support may be necessary [see Economy Memorandum paragraph 5 (b) (ii)].

APPENDIX II

Timber Content of Typical House (of 1,032 sq. ft.)

The following table indicates the full usage of softwood in a present-day house of a typical design (1,032 ft. super—including outhouse and covered way) with a gabled roof at a pitch of 40° and covered with plain tiles. The timber specified is in accordance with the recommendations of the Economy Memorandum. An appropriate allowance for waste has been made in respect of each item.

ROOF—	Cu. ft.
Rafters (2 in. × 3 in.) and trimmers (2 in. × 4 in.)	23.10
Ridges (¼ in. × 5 in.)	0.66
Purlins (2 in. × 7 in.)	4.73
Struts (2 in. × 4 in.)	1.76
Hangers (1 in. × 4 in.)	4.62
Binders (1 in. × 3 in.)	1.98
Plates (2 in. × 3 in.)	2.42
Beams (2 in. × 5 in.)	2.31
Ceiling joists, trimmers, etc. (2 in. × 3 in.)	16.39
Tiling battens (1 in. × 1 in.)	16.50
Fascia (¼ in. × 5 in.)	1.43
	75.90
	= 0.460 std.

FIRST FLOOR—	Cu. ft.
*Joists (2 in. × 6 in., 2 in. × 7 in.) trimmers (3 in. × 7 in.) and strutting (1 in. × 2 in.)	48.62
Tongued and grooved flooring (¾ in.) ...	30.91
	79.53
	= 0.482 std.

JOINERY—	Cu. ft.
†Casement windows (2½ in. × 3¾ in. framing)	22.30
Panelled doors	16.30
Ledged and braced doors (outbuilding)	3.30
Door linings (1 in.) stops and frames ...	12.10
Skirtings and architraves (¾ in. × 3½ in.) picture rail in living-room (¾ in. × 2 in.)	6.50
Cupboards and kitchen units ...	16.30
Stairs	11.65
Sundries	4.20
	92.65
	= 0.561 std.

APPENDIX III

Use of Alternative Methods and Materials

(1) An estimate has been made below of the approximate quantities of softwood which would *not* be required if certain other alternative materials were used instead in the typical house described in Appendix II. There are of course other methods of construction adopted, where supplies of the necessary steel can be secured and costs permit, which require less softwood, such as the use of main steel joists, or by the construction in a variety of ways of reinforced suspended floors or flat roofs. But in such cases it is impossible to make an estimate which would be generally applicable. Applications for softwood licences should take account of any timber not required if these or similar materials and methods of construction are employed.

	Standard.
(*a*) Where metal windows are used ...	0.12
(*b*) Where metal door-frames are used ...	0.10
(*c*) Where a pitched steel roof construction is used	0.30
(*d*) Where softwood is omitted from fitted cupboards, dressers, etc., in favour of hardwood, plywood or steel	0.06
(*e*) Where flush doors are used internally instead of panel doors	0.03

(2) Similarly, the design and specification of many new houses embody the following methods of construction. In such cases also, applications for softwood should take into account the net economies made.

	Standard
(*a*) If interlocking tiles, asbestos cement slates or natural slates (of 8 in. and wider) are used, reducing the pitch of the roof to 35 deg.	0.13
(*b*) If roof purlins are strutted from load-bearing partitions on the upper floor ...	0.04

* 2-in. timbers are taken because 1½ in. timbers are not always readily available.

† On basis of draft B.S.S. now under consideration.

THE COST OF STATE HOUSING

Speaking to the Hastings and District Association on November 14, Mr. Keith Martin (President, Southern Counties Federation of Building Trades Employers) referred to the fact that 25,000 fewer houses would be built by reason of the capital cuts. The recent Government circular directing local authorities to issue no more fresh housebuilding licences meant that future housing would practically all be subsidised. Traditionally built local authority houses attracted a subsidy of £22 per annum for 60 years. The 175,000 such houses proposed for next year would cost the taxpayer, over 60 years, £173,250,000 and the ratepayer £57,750,000—a total of £231,000,000. In addition, costs of labour and materials, under devaluation, were bound to rise. Against that depressing picture houses built by the private housebuilder, which cost the taxand ratepayer nothing, had been stopped.

OFFICIAL NOTIFICATIONS

Changes in the Control of Timber.

A number of changes in the control of timber, which will take effect on Monday next, November 21, are announced by the Board of Trade.

Hardwood: In order to conserve scarce supplies and direct them to essential users, it has become necessary to add two kinds of hardwood to those few still subject to control of acquisition, consumption, etc. These are American Oak, and nearly all of the previously uncontrolled specifications of teak lumber and logs. The full list of controlled hardwoods will then be Ash, Basswood, Canadian and American Birch, American Cypress, Hickory, Honduras Mahogany, Rock Maple, American Oak and American Poplar; and also Teak (Tectona grandis) of all specifications (except scantlings and strips 4 inches and under thick by 5 inches and under wide, other than decks imported as such). All other kinds of hardwood may be bought and used without licence. Price control under the Imported Hardwood Prices Orders remains unaffected.

Softwood: Supplies of softwood are sufficient only for essential licensed purposes, and it has therefore become necessary to discontinue licence-free acquisition of £1 worth of home-grown and "recovered-unclassified" timber each month. Accordingly, from November 21 the acquisition, disposal, use and consumption of *all* softwood will require a licence under the Control of Timber (General Provisions) Orders.

Plywood: Without needing a licence, everybody will be able to buy from plywood merchants up to £2 worth each month of the kinds of plywood which are now less scarce.

Veneer: Control of acquisition, disposal, use and consumption of Veneer will cease; that is, licences will no longer be needed for these purposes. Price control and the present arrangements for import licence (where applicable) remain unchanged.

All these changes are made by the Control of Timber (No. 52) Order, 1949 (S.I. 1949 No. 2093) now obtainable from H.M. Stationery Office, price 1d.

Tin Control Ends.

The Minister of Supply has made an Order* which frees tin from his control from November 15, the date on which the London Metal Exchange resumes dealings in tin. The Ministry's published prices are withdrawn from that date. Consumers in the United Kingdom will not thereafter require a licence to acquire tin. They should obtain their supplies through commercial channels.

Orders for tin bearing a postmark up to and including November 14 will be accepted by the Directorate of Non-Ferrous Metals, Rugby, at the Ministry's current prices. The Board of Trade announces that under an Order† which also comes into operation on November 15, tin in certain forms (not alloys, ores or concentrates) is freed from export licensing control.

W.D. Claims by Brickworks, etc.

The War Damage (Public Utility Undertakings, etc.) Act, 1949, which has repealed Section 70 of the War Damage Act, 1943, makes provision for dealing with the War Damage Claims of certain classes of undertakings, including those rated by reference to accounts, receipts and profits. The most important of these undertakings are mines, brickworks, quarries, gravel, sand and other mineral undertakings.

Claims by these undertakings, states the Ministry of Works, are now remitted to the principal Act, and should be made to the appropriate Regional Office of the War Damage Commission. The War Damage (Remitted Claims) Regulations, 1949 (S.I. 1949 to No. 2019) made by the Treasury on October 31, 1949, provide that it shall be a condition of the acceptance of such claims that notifications of the damage shall, unless the damage has been already notified to the Commission or to another Government Department, have been made by May 2, 1950. Should there be any further incidents of damage (e.g., unexploded bombs) notification must be made within 30 days of the occurrence of the further war damage. Forms of notification and claim (C.1) can be obtained from any of the War Damage Commission's Regional Offices.

* Control of Tin (No. 6) (Revocation) Order, 1949.

† Export of Goods Control, Amendment No. 7, Order, 1949.

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NEW BUILDINGS

Bargeddie.—Plans in hand for new public school, for which the architect is William Watt, Albert-rd., Motherwell,-Wishaw.

Bothwell.—Plans to be prepared for reconstruction, additions and extensions at Billcard-rd., for Chapel The Lindans, for which the architect is Mr. Alexander MacGregor Mitchell, 105, Bath-st., Glasgow, W.C.2.

East Kilbride.—Plans in hand, consisting of offices, new buildings, shelter and explosives magazine, etc., for which the architect is Andrew Jackson, Buchandyke, East Kilbride, Lanarkshire.

Glasgow.—Plans in hand for scheme of flats at Orkney-st. site, and eight 3-apartment houses, for which the architect is Archibald J. Jury, Corporation Housing Officer, Glasgow Cross, The Trongate, Glasgow, E.C.1.

Kilmarnock.—Plans in hand for 32 houses, at £41,600, for which the architects, etc., are the Scottish Special Housing Association, 15, Palmerston-pl., West End, Edinburgh.

FUTURE CONSTRUCTION

PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

NOVEMBER 21.

†***Pembrokeshire C.C.**—Erection of (a) Sageston County Primary School; and (b) Milford Haven New Infants' School. Walter Barrett, M.B.E. (A), County A., County Offices, Haverfordwest. Dep. £5 5s. Tenders by December 6.

NOVEMBER 22.

†***Birmingham T.C.**—28 aged persons' bungalows at Court Oak-rd., Harborne. City E. & S., Civic Centre. Dep. £2 2s.

NOVEMBER 23.

†***Gosport T.C.**—17 houses at Woodcot estate. B.E., Town Hall. Dep. £2 2s.

†***Hampshire Police Authority.**—Police house at Havant and one at West Meon. County A., The Castle, Winchester. Dep. £1 1s. each.

†***Leeds Regional Hospital Board.**—New operating theatre and maternity wing at St. Luke's Hospital, Little Horton-la., Bradford. Architect to the Board, 29-31, Eastgate, Leeds, 2. Dep. £2 2s. Tenders by December 7.

†***Northampton C.B.**—Two additional classrooms and stores, Headlands School, Weston Favell. H. C. Perrin, Chief Education Officer, "Springfield," Cliftonville. Dep. £2 2s.

†***Reading C.B.**—Foundations work for erection of Reading Technical College. Lanchester & Lodge (FF.), 10, Woburn-sq., London, W.C.1.

†**Sutton-in-Ashfield U.D.C.**—Six bungalows at Columbia-st., Huthwaite. Warner & Dean, architects, Mansfield-rd., Sutton-in-Ashfield. Dep. £2 2s. Tenders by December 14.

NOVEMBER 24.

†***Beds. C.C.**—Extensions at Bedford Goldington Green County Primary School. County A., Shire Hall, Bedford. Dep. £2 2s.

†***Farnborough U.D.C.**—12 flats at Hawley-la. estate. E. & S., Town Hall. Dep. £3. Tenders by December 7.

NOVEMBER 25.

†***Bristol T.C.**—96 flats at Lawrence Weston site. J. Nelson Meredith (F.), City A., Eagle House. Dep. £2 2s. Tenders by December 15.

†***Cossham and Frenchay Hospital Management Committee.**—Alteration and extension to games room building at Frenchay Hospital into general operating theatre block. E. R. Clark, Secretary, Frenchay Hospital, Bristol. Dep. £2 2s.

†***Newcastle-on-Tyne Regional Hospital Board.**—New pharmacy block at Dryburn Hospital, Durham. E. B. Jenkins, Secretary, "Dunira," Osborne-rd.

***Southampton C.B.**—War damage repairs, etc., at Shirley Warren Secondary School. Boro' A. Dep. £2 2s.

†**Wellington (Salop) U.D.C.**—34 houses at Rawley-rd. Walter B. Bond, F.I.Q.S., Colmore-chbrs., 3, Newhall-st., Birmingham, 3. Dep. £2 2s.

NOVEMBER 26.

Carmarthenshire C.C.—Three police houses at Banc Pendre, Kidwelly. County A., County Hall, Carmarthen. Dep. £3 3s.

†***Peterborough T.C.**—Branch library at junction of Orchard-st. and Queens-walk. F. J. Smith, M.B.E., A.M.I.C.E., City E. & S., Town Hall. Dep. £2 2s. Tenders by December 10.

NOVEMBER 27.

†***Gateshead C.B.**—Ambulance hut at Saltwell Park. H. J. Cook (A.). Chief A. Dep. £3 3s. Tenders by December 19.

NOVEMBER 28.

Cumberland C.C.—One pair of police houses at Church-st., Manpoint. County A., 15, Portland-sq., Carlisle.

Dewsbury T.C.—14 houses at Walnut-la. estate. Boro' A. & Building S., Town Hall. Dep. £2.

†***Isle of Ely C.C.**—First portion of four-form entry secondary modern school. R. D. Hobson (A.), County Hall, March. Dep. £5 5s.

†***Isle of Ely C.C.**—Conversion of Nissen hutted camp to secondary school. R. D. Robson (A.), County Hall, March. Dep. £2 2s.

Manchester T.C.—Hutted dental clinic at Stanley-gr. City A., Town Hall. Dep. £1 1s.

†***Metropolitan Water Board.**—Three houses with site works at Lea Bridge-rd. S., Offices of the Board, New River Head, Rosebery-ave., E.C.1. Dep. £2 2s.

†**Newton Abbot R.D.C.**—Two pairs of houses at Laburnum-ter. C., Council Offices. Dep. £2 2s.

Richmond (Surrey) T.C.—Six temporary shops at Back-la., Ham. B.E., Hotham House, Heron-court. Dep. £2 2s.

†***Walthamstow B.C.**—24 flats at east side of Chingford-rd. Boro' A., Town Hall. Dep. £2 2s. Tenders by December 23.

NOVEMBER 29.

Ellesmere R.D.C.—12 houses Baschurch, with sewers, etc. W. B. Bond, 3, Newhall-st., Birmingham. Dep. £2 2s.

†***Norfolk E.C.**—Reinstatement of war damage at King's Lynn, King Edward VII Grammar School. W. O. Bell, Chief Ed. Officer, Stracey-rd., Norwich. Dep. £5. Tenders by December 15.

NOVEMBER 30.

Honiton R.D.C.—Four houses at Upottery. S., Council Offices, Manor House. Dep. £2 2s.

***Hunts. C.C.**—Alterations and additions at "The Lindens," Children's Home, Fenstanton. County A., County-bldgs., Huntingdon.

Lutterworth R.D.C.—(1) 16 houses with roads and sewers at Broughton Astley; (2) 22 with roads and sewers at Leire. S., Council Office. Dep. £2 2s.

†***Somerset Standing Joint Committee.**—24 police houses at various sites. R. O. Harris (F.), County A., Park-st., Taunton. Dep. £2 2s.

†***West Bromwich C.B.**—Children's Reception Centre at Pennyhill-la. B.E. & S., Town Hall. Dep. £2 2s.

DECEMBER 1.

†***Ledbury R.D.C.**—Four houses, Eastnor housing estate. Gordon Smith & Craft, architects, Shell House, The Hornend. Dep. £2 2s.

Leeds T.C.—Children's home at Ireland Wood, Cookridge estate. City A. Dep. £2 2s.

DECEMBER 2.

†***Bucks C.C.**—Primary school at Chorley Wood. County A., County Offices, Aylesbury. Dep. £5 5s. Tenders by January 2.

Glamorgan C.C.—(1) Erection of Longford Neath, Interim Secondary School; (2) erection of Porthcawl, Noltage, Primary School. County A., Glamorgan County Hall, Cardiff. Dep. £2 2s.

DECEMBER 3.

***Durham County Police Authority.**—One pair of houses at Gore Hall Farm, Thornley. County A., Court-la., Durham.

†***Gateshead C.B.**—Erection of hostel for aged persons at Beacon Lough estate. H. J. Cook (A.), Chief A., Swinburne-st. Dep. £5 5s. Tenders by December 19.

***Kidderminster T.C.**—54 houses at Birchen Coppice estate. B.E. & S., 110, Mill-st. Dep. £2 2s.

Kirburton U.D.C.—Four houses at Back-la Grange Moor. E., Town Hall. Dep. £2 2s.

Macclesfield R.D.C.—Nine houses at Butley-lanes, Butley Ward, Prestbury. H. Chadwick. 19, King Edward-st. Dep. £3 3s.

DECEMBER 5.

***Bushey U.D.C.**—Conversion of 10 hutments at Aldenham-rd. into temporary living accommodation. E. & S., Council Offices.

***Huntingdonshire C.C.**—Additional accommodation, Huntingdon Secondary Modern School. S. J. Hands, County A., Huntingdon.

Lleyn R.D.C.—17 houses at 4 sites. C., Metro-bldgs., Pwllheli.

Morpeth T.C.—Six houses. B.S., 36, Bridge-st. Dep. £2 2s.

Nuneaton T.C.—Three blocks of 3-storey flats at Church-st. F. Gibberd (F.), 35, Gordon-sq., W.C.1. Dep. £2 2s.

***Preston C.B.**—Additional classrooms and alterations at Fishwick County Secondary School. B.E. & S., Municipal-bldgs. Dep. £2 2s.

DECEMBER 6.

Kearsley U.D.C.—16 bungalows with incidental works at Bank Top estate. E. & S., Town Hall. Dep. £2.

DECEMBER 7.

Aylesbury R.D.C.—Two pairs of bungalows at Bierton. R. C. White, 4, Temple-sq., Aylesbury. Dep. £3 3s.

DECEMBER 8.

***Alton R.D.C.**—Three pairs of aged persons' bungalows at Froyle housing site. C., Barton End. Dep. £3 3s.

DECEMBER 9.

***Berks. C.C.**—Adaptation of Donnington Lodge, Newbury, as special primary boarding school for deaf children. County A., Wilton House, Parkside-rd., Reading. Dep. £2 2s.

***Berks. C.C.**—New County Junior and Infants' School, Newbury. County A., Wilton House, Parkside-rd., Reading. Dep. £5 5s.

East Ham C.B.—Extension to Dersingham Infants' School. Walters, Whitby & Kerr Bate (A. & L.), 10, Gt. James-st., W.C.1. Dep. £2 2s.

†***Portsmouth T.C.**—72 houses at Leigh Park. City A., City Council-chbrs., 1, Clarence-parade, Southsea. Dep. £3 3s.

DECEMBER 12.

***Belper U.D.C.**—Ten houses at Belper-la., site No. 3. A. Percy Taylor, A.I.A.S., M.Inst.R.A., 59, Chapel-st., Belper, Derbys. Dep. £2 2s.

***Blackburn.**—Erection of St. Mary's Roman Catholic Infant School, Bennington-st. (Orbit construction). H. Greenhalgh, F.R.I.C.S. (L.), Court-chbrs., 15, Mawdsley-st., Bolton. Dep. £2 2s.

***Congleton T.C.**—Ten aged persons' bungalows at Rood Hill site. B.E., Town Hall. Dep. £2 2s.

York T.C.—Extensions to Art Gallery and School of Art. City E. & Architect. Dep. £1.

DECEMBER 15.

***Gillingham T.C.**—18 flats at Featherby-rd. East Court-la. estate. B.S., Municipal-bldgs. Dep. £5 5s.

DECEMBER 19.

St. Ives T.C.—20 houses at Green Leys estate. E. Price Lavender (F.), 17a, The Broadway, St. Ives, Hunts. Dep. £2 2s.

***Warrington C.B.**—Erection of new Long-la. County Primary School, Long-la. B.S., Town Hall. Dep. £5 5s.

DECEMBER 22.

***Darlington C.B.**—Alterations and additions to Salters-la. Open Air School. Boro' A., Central-bldgs. Dep. £2 2s.

***Leicester T.C.**—50 houses at Evington estate and 75 at Goodwood estate. Housing A., Municipal Offices. Dep. £2 2s.

***Shropshire E.C.**—New primary school at Ludlow. Hobbiss & Hobbiss, 36, Waterloo-st., Birmingham, 2. Dep. £2 2s.

NO DATE.

***Boxhill T.C.**—40 flats and maisonettes, Ninfield-rd. housing site. A. E. Geldard, B.E. & S. Dep. £2 2s.

***Peterlee Development Corp.**—64 houses at Thorntree Gill site, Horden, Co. Durham. A. V. Williams, General Manager, Shotton Hall, Castle Eden, Co. Durham. Dep. £2 2s.

ROADS, SEWERAGE AND WATER WORKS

NOVEMBER 28.

†**Crawley Development Corporation.**—Sewers and reinforced concrete culverts. Chief E., Broadfield, Crawley, Sussex.

NOVEMBER 30.

Manchester T.C.—Roads and sewers at Northern Moor neighbourhood unit, Wythenshawe. City S. Dep. £2 2s.

DECEMBER 1.

Wilts C.C.—Road works at Lowbourne, Melksham. County S., County Hall, Trowbridge. Dep. £2.

DECEMBER 2.

***Woking U.D.C.**—Surface water sewer at Rydens-way, Old Woking. E. & S., Council Offices. Dep. £2 2s.

DECEMBER 5.

Derby C.B.—Construction of storm water relief sewer at Sinfin, contract No. 1. B.E. & S. Dep. £5 5s.

Exeter T.C.—Footpaths, etc., at Stoke Hill estate. City E. & S. Dep. £5 5s.

Exeter T.C.—Footpaths, etc., at Countess Wear estate, section A. City E. & S. Dep. £5 5s.

DECEMBER 9.

Heywood T.C.—Roads and footpaths at Gooden Farm estate. B.E. & S. Dep. £2 2s.

DECEMBER 12.

Chesterton R.D.C.—Construction of Graveley water scheme. E. & S., County Hall, Hobson-st., Cambridge. Dep. £2 2s.

DECEMBER 14.

Newent R.D.C.—Construction of Dymock sewerage and sewage disposal. A. H. S. Waters, M.I.C.E., 25, Temple-row, Birmingham, 2. Dep. £3 3s.

NO DATE.

Ringwood.—Road and drainage works for B.O.A.C. (Hurn) Housing Assoc. site. Frank Andrews (L.), 45, High-st., Ringwood.

GENERAL BUILDING WORK

(LONDON)

Dagenham.—Dwellings.—Housing and T.P. Comm. propose 94 dwellings (including 60 flats) as stage 2 of Heath Park Estate, for which the architects are Norman and Dawbarn, 5, Gower-st., W.C.1.

Dagenham.—Maisonettes and Flats.—L.C.C. propose 30 maisonettes and 12 flats on Bull-la. site. Plans by L.C.C. director of housing.

Dagenham.—Houses.—21 houses are proposed at Havering-gdns. by E. T. Dalder, builder, 1, Blackbush-ave., Chadwell Heath, Romford. Plans by firm's own architect's dept.

Dagenham.—School.—Plans have been prepared by C. C. Shaw, F.R.I.B.A., Boro' A., Town Hall, Barking, for a junior and infants' school at Western-ave.

Dagenham.—Kitchen and Dining Room.—Lymington Sec. School may be provided with a kitchen and dining room. Plans by Essex C.C. Architect's Dept., Town Hall, Chelmsford.

Dagenham.—Showrooms.—Motor showrooms are proposed on sites of 239-41, High-rd., Chadwell Heath. Plans by H. G. Needham, architect, 139, Earlham-gr., E.7.

Dagenham.—Alterations.—R. F. Harris-Leach proposes alterations to a dental clinic at 1, Mayfair-parade, Whalebone-la. South.

Dagenham.—School.—B.C. Ed. Comm. propose building (1951) an infants' school at Rush Green at est. cost of £85,000. No architect yet appointed.

Dagenham.—School.—Erection of Rookery Farm infants' school at £56,000 is proposed by B.C. Ed. Comm. (1951). No architect yet appointed.

Dagenham.—School Extension.—Extensions estimated to cost £5,000 are proposed by B.C. Ed. Comm. at Charlecote Sec. Tech. School (1951). No architect yet appointed.

Dagenham.—School.—B.C. Ed. Comm. propose building Oxlow-la. infants' school at about £40,000 (1952). No architect yet appointed.

Dagenham.—School.—Building of Rookery Farm junior school at £64,000 is proposed by B.C. Ed. Comm. (1952). No architect yet appointed.

Dagenham.—School.—Cost of erecting Crow-la. R.C. school (1953) is estimated by B.C. Ed. Comm. at £240,000. No architect yet appointed.

Dagenham.—School.—B.C. Ed. Comm. propose building Marks Gate infants' school in 1954 at about £66,000. No architect yet appointed.

Dagenham.—School.—Marks Gate juniors' school to be erected in 1954 by B.C. Ed. Comm. is to cost £96,000. No architect yet appointed.

Hammersmith.—Flats.—Plans for block "V" (25 flats) on the Dalling-rd. (west side) are being drawn up by Boro' A.

Hammersmith.—Flats.—Boro' A. is preparing plans for 6 flats at 69-77 (odd), Black Lion-la., W.6.

Hammersmith.—Dwellings.—B.C. propose to use site of 1-17, Sycamore-gdns., W.6, for housing purposes.

Hendon.—Canteen.—Chief Engineer's dept., Express Dairy Co., Ltd., of 15-17, Tavistock-pl., London, W.C.1, is preparing plans for staff canteen at the Milk Depot, Claremont-rd.

London.—Schools.—Plans for the 8 new primary schools to be built by the L.C.C. according to the standard steel-frame method evolved by Hills (West Bromwich), Ltd. (see last week's issue of *The Builder*), are being prepared under the direction of R. H. Matthew, A.R.I.B.A., Architect to L.C.C.

Pall Mall.—Offices.—An advisory panel of architects, headed by Professor Basil R. Ward, F.R.I.B.A., 32, Wigmore-st., W.1, has been formed to prepare a preliminary scheme for the proposed new New Zealand House ultimately to be erected on the sites of Nos. 1 to 5, Pall Mall, S.W.1, for the New Zealand Government, who have bought the existing property for £325,000. Other architects on the advisory panel are: Messrs. F. W. Armstrong, F.R.I.B.A., R. N. Wakelin, A.R.I.B.A., R. H. Uren, A.R.I.B.A., and Brian O'Rorke, F.R.I.B.A.

(PROVINCIAL)

Allscott.—British Sugar Corporation, Ltd., propose alterations and extensions at sugar beet factory.

Ashbourne.—Alterations proposed to "Green Man" hotel at £7,000.

Ashton-under-Lyne.—B.C. approved plans for:—Public-house at Lees-rd., Broadoak-rd., and alterations to Robin Hood hotel, Oldham-rd., for Gartsides (Brookside Brewery), Ltd.; alterations to White Bear hotel, Warrington-st., for Boddingtons Breweries; extensions to factory at Atroy Works, Oldham-st., for Williamson & Ball, Ltd.; alterations to canteen at Stamford Commercial Mill for Stamford Commercial Mill Co., Ltd.—Boro' S. to prepare plans for garage and office accommodation at Town's Yard, Wellington-rd.; propose adapting Hurst Hall Lodge as library; seek M.O.H. approval for civic restaurant and cooking depot, adjoining Warrington-st., at £20,000.

Barnard Castle.—Alterations are proposed to the "Golden Lion" hotel, "Bridge Inn" and the "Foresters Arms."

Barnton.—British Legion propose new headquarters.

Blackpool.—E.C. propose additional classrooms at rear of Arnold high school for girls at £5,000.

Boldon.—U.D.C. has approved plans by the surveyor, N. Hindmarch, Council Offices, East Boldon, near Sunderland, for 66 houses

Bolton.—T.C. seek loan of £5,000 for extensions to bus station at Moor-la.—T.C. received sanction to borrow £85,038 for 42 houses and 8 shops at Lever Edge-la. and Breighmet Estates; propose 2 shops, 2 houses and 2 maisonettes at Snow Hill Estate, and 12 houses at Deane-rd.

Bradford.—T.C. recommended to approve plan by City A. for layout of proposed receiving home at Squire-la.; also plan for adaptation of "Moorville," Killinghall-la., for day nursery.

Bury.—T.C. approved plans for:—Rebuilding mission church at Kay-st. for Bury and District Congregational Board; factory extensions at Butcher-la. for Guide Bridge Rubber Co., Ltd.; alterations at 5, Silver-st. for Boots Cash Chemists, Ltd.; 4 houses at 2-8, Elton Vale-rd. for Hughes Bros. (Builders and Contractors), Ltd.

Chapel.—R.D.C. seek loan of £44,350 for 34 houses at Park-rd. Surveyor, T. Dinsdale.

Chester.—R.D.C. propose erection of houses at Stamford Bridge.

Chesterfield.—B.C. propose extensions to Mary Swanwick Primary School. Plans by Wilcockson & Cutts, 12, Saltergate, Chesterfield.—B.C. propose 9 public conveniences on various sites.

Chester-le-Street.—Fennell & Co., Bridge Endchbrs., Chester-le-Street, are architects for proposed bakery with flour store at Bridge End for Mr. A. Stafford, confectioner, Bridge End, Chester-le-Street, Co. Durham.

Coventry.—E.C. to erect new school at Wyken. D. E. E. Gibson, City A.

Darlington.—Ed. Comm. has approved a building programme of five schools for 1951-54. This year's and next year's programme is for an open-air school, new classrooms and a girls' high school. Boro' A., E. A. Tornbohm, Municipal-b'dgs.

Durham.—County E.C. to convert Elemore Hall into special school at £40,000. Plans (still in preliminary stage) are by County A., Court-la., Durham.

Eccles.—B.C. to invite tenders for 60 houses on Ellesmere Park Estate. Surveyor, T. Elce.

Gateshead.—Alterations are proposed to the "Askew Arms" public-house, Askew-rd., for Newcastle Breweries, Ltd.—Hendees, Ltd., bakers, Lobley Hill-rd., Dunston, are to build workshops and garage in Kyle-rd., to plans by Fennell & Co., Chester-le-Street.—Plans have been approved for transmitting station at White-house-la., Wrekenton, for B.B.C.—Plans have been approved for alterations to Fountain View, Bensham, conveniences at Saltwell Park and alterations to Bensham-gr. Settlement, all for Gateshead T.C.

Gateshead.—Chief A., H. J. Cook, has been asked to prepare layout plans for the erection of houses in the grounds of "The Cedars."

Guiseley.—J. J. L. & C. Peate (Guiseley), Ltd., propose extensions to Nunroyd Mills.

Gwyrfai.—R.D.C. propose 8 houses at Beddlegert, 10 at Rhewlas, 8 at Dinorwic, 8 at Llanrug, 6 at Rhosgadfan, 2 at Rhostryfan, 8 at Bontllylm, 8 at Nant Peris, 10 at Penma Rwaen, 16 at Llanllyfni, 6 at Clynnog and 4 at Nebo. Architect, D. H. Roberts, L.R.I.B.A.

Hepton.—R.D.C. propose 28 dwellings at Billy-la., Wadsworth.

Horsham.—L.C.C. Ed. Comm. recommend that £70,370 be approved for adaptation of Warnham-ct. as residential special school.

Houghton-le-Spring.—U.D.C. is to build 114 houses. Plans by Surveyor, Council Offices, Houghton-le-Spring, Co. Durham.

Jarrow.—T.C. has approved a site in Tye-st. for a factory for tuberculosis workers to be built by Remploy, Ltd.

Lancs.—E.C. have appointed Charles B. Pearson & Son, Lancaster, architects for conversion of "Massey Hall," Thelwall, to special school.—E.C. proposed grammar school at Upholland (plans by Yorke, Rosenberg & Mardall, 2, Hyde Park-pl., London, W.2); propose extensions to Middleton Alkrington County School (plans by Howard & Benson, 88, Mosley-st., Manchester).—Plans have been completed by Thorpe & Whyman, Barclays Bank-bldgs., Church-la., Oldham, for proposed St. Hilda's C.E. School, Stretford.—County A., G. Noel Hill, to prepare plans for proposed technical school at Widnes.

Leyland.—Proprietors of "Regent" cinema seek licence for £25,000 for rebuilding.

Manchester.—Regional Hospital Board propose new accident and consultation department at Leigh Infirmary at £35,115.

Matlock.—U.D.C. to acquire further site at Bonsall for housing.

Middleton.—B.C. approved plans for:—Extensions to day nursery at Cromer Ring Mill for Cromer Ring Mill Co. (1919), Ltd.; conversion of building to canteen at Rhodes Print Works for Calico Printers' Association; extension of press shop, Apex Works, for Hunt & Moscrop, Ltd...—B.C. preparing quantities for 56 houses at Hollins estate.

Mossley.—T.C. to develop 56-acre site at Micklehurst for housing purposes.

Newcastle-on-Tyne.—Tyne Improvement Commission, Bewick-st., Newcastle-on-Tyne, to spend £20,000 on modernisation of engineering workshop at Tyne Dock. Plans by Commissioners' Chief Engineer.

Newcastle-on-Tyne.—R. Burke, 10, Lambton-rd., Jesmond, Newcastle-on-Tyne, is architect

"THE BUILDER" PRICES

PLASTERBOARD

The Minister of Works has confirmed the reduction of ¼d. per square yard in the selling prices of gypsum baseboard and lath and ½ in., ⅝ in. and ¾ in. thicknesses of wallboard, which has been made possible by a decrease in the cost of raw materials. This reduction operates from November 3, 1949.

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1949

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for a factory for Newcastle Dairymen's Association. No contracts yet let.

Newcastle-on-Tyne.—Corporation is to lay out the Fairway estate for houses. City A., G. Kenyon, 18, Cloth-market, Newcastle.

Newcastle-on-Tyne.—Mawson, Swan & Carter, Ltd., are to make extensions in Coquet-st. Architects, J. Walton Taylor & Son, Gallowgate, Newcastle.

Newcastle (Staffs).—The Tyneside Foundry Co., Skinnerburn-rd., are to make extensions to their factory. Architect, C. Solomon, St. Mary's-pl., Newcastle.

Northampton.—R.D.C. to erect 20 aluminium bungalows at Dunston.

Northumberland.—Ed. Comm. is to build a school for 560 places at Bebside, Blyth. Plans by County A., W. W. Tasker, County Hall, Newcastle.

Notts.—E.C. propose new school at Kingswell. Plans by E. W. Roberts, County A.

Pickering.—R.D.C. approved erection of 24 houses at Thornton-dale, 4 at Wilton and 4 at Kirby Misperton.

Richmond (Yorks).—T.C. has approved a proposal by North Riding Ed. Comm. to build a county college, two secondary schools, extension of the grammar school and the building of a primary school. County A., County Hall, Northallerton.

Rugby.—B.C. approved erection of 34 houses at Rokeby Estate.

Salop.—E.C. received M.O.E. approval for 5 new schools in 1950; to erect a central kitchen at St. George's, Oakengates, at £5,000, and kitchen/dining-room at Market Drayton Secondary School at £6,600. County A., A. G. Chant.

Settle.—R.D.C. propose 10 houses at Park-ave., Hellifield. Plans by J. N. Spencer, Dean House, Piccadilly, Bradford.

South Shields.—T.C. to build 25 terrace houses for coloured people in Laygate-st. John Reid, Boro' E.

South Shields.—The South Shields Trustee Savings Bank, Ltd., proposes bank premises in Boldon-la.—T.C. intends erecting four shops with flats above on adjoining land.

South Shields.—A development scheme costing £90,000 designed by Boro' E., John Reid, to improve the town's amenities as a seaside resort, has been approved in principle by T.C.

Stanley (Co. Durham).—U.D.C. received loan sanction for £8,752 for 10 houses in Sunny-ter., Dipton; £29,515 for 20 houses, Annfield-st., Dipton; and £65,650 for 50 "Orlit" houses at South Stanley. J. R. Heslop, Surveyor, Council Offices, Stanley.

Stanley (Co. Durham).—Northern Coal Board, Newcastle-on-Tyne, to carry out alterations to Burnopfield Colliery offices.—Additions are proposed to "Causey Arch" inn for Mr. D. Watson.—Northern Coal Board propose pithead baths at Beamish Mary Pit.—U.D.C. approved in principle scheme for crematorium to serve Consett, Lanchester and Stanley.

Stoke-on-Trent.—E.C. propose county grammar school at Bucknall. Plans by City A., J. R. Piggott.

Sunderland.—River Wear Commissioners are to rebuild one of their workshops at a cost of £16,000. W. S. Tripp, engineer, River Wear Commissioners, John-st., Sunderland.

Tyldesley.—U.D.C. received approval for 24 houses at Shakerley estate. Surveyor, D. Urwin.

Wallasey.—B.C. propose hostel for aged, about £40,000.

West Hartlepool.—T.C. to erect a further 40 houses at Owton Manor. Plans being prepared by Boro' A., S. M. Richmond, Municipal-bldgs., West Hartlepool.

West Hartlepool.—Boro' A., S. M. Richmond, has prepared a £13,750 plan for the erection of a crematorium. Approval of M.H. being sought.

Westmorland.—C.C. to purchase and adapt "Fayrer Holme," Storrs Park, Lake Windermere, as hostel for aged at £10,000.

West Riding.—E.C. propose extensions to Burnley-rd. School, Mytholmroyd, at £17,023. First stage of Sowerby Bridge Junior and Infants' School in 1950.

West Riding.—E.C. propose day nursery at New-rd., Mytholmroyd. County A., H. Bennett, Wakefield.

Whitley Bay.—A licence has been granted for the reconstruction of Gregg's Restaurant and Cafe, a two-storied building. The contractors are R. A. Gofton & Son, 30, Front-st., Monkseaton, Whitley Bay.

Wigan.—R.D.C. approved plans for assembly hall and extensions at Writhington for Tunley Presbyterian Church, Mossy Lea.

Withnell.—U.D.C. propose erection of 20 houses.

Wolverhampton.—E.C. propose county primary school at Warstones. Plans by W. M. Law, Boro' E.

Worcs.—M.O.E. approved following buildings for 1950:—Birchen Coppice primary, Kidderminster; Lickey primary; Alvechurch primary; Stourport secondary (first instalment); Stourport infants' (extensions); Rhydd Court (£10,000); Oldbury technical college (£120,000). —To commence structural work at Malvern Poolbrook secondary school in February, 1950. County A., L. C. Lomas.

Workington.—B.C. plans submitted:—Layout of Laverock Hall Estate for James Leslie & Sons, Coach-rd., Whitehaven; alterations to warehouse, Portland-sq., for F. Proudfoot. Plans by Jonathan Saul, Workington.—B.C. propose 8 shops at Salterbeck Estate.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government Departments*.

Birmingham.—Commercial College at Broad-st., for T.C.: *C. Green & Sons, Ltd.; infants' school at Turoes Green: *W. J. Simms, Son & Cooke, Ltd., Nottingham.

Bolton.—54 houses and flats in three sections at Rishton-av., Lever Edge-la., for T.C. Thomas P. Rae (L.), F.I.Hsg., architect: *W. Lionel Gray (1933), Ltd., Hospital-bldgs., Darley, Farnworth, £54,809 (subject to M.H. approval).

Canterbury.—Block of flats at Martyrs Field site, for T.C. L. Hugh Wilson (A.), A.M.T.P.I., City A., Municipal-bldgs., Dane John. Quantities by Widnell & Trollope, Broadway, London, S.W.1: *K. A. Hawkes, Ltd., "St. Margaret's," Minnis-rd., Birchington, Kent, £21,708.

Cheltenham.—13 maisonettes and 48 flats at Lynworth estate, for B.C. G. Gould Marsland, B.Sc., Boro' E., Municipal Offices: *The Leckhampton Estates, Ltd., 18-22, Suffolk-rd., Cheltenham.

Coventry.—Junior and infant school, Wyken Croft, for E.C. Architects' Co-operative Partnership: *E. Harris & Son (Coventry), Ltd., Burnsall-rd., £110,000 (approx. cost).

Derby.—Dining-room and kitchen at Nottingham-rd. school, for C.B. T. W. East (F.), Boro' A., Council House: *Ford & Weston, Ltd., Osmaston-rd., Derby, £8,389.

Derby.—New junior school at The Mount site, Grange-av., Normanton, for C.B. T. W. East (F.), Boro' A., Council House: *Ford & Weston, Ltd., Osmaston-rd., Derby, £97,898.

Derby.—Dining-room and kitchen at Nightingale-rd. school, for C.B. T. W. East (F.), Boro' A., Council House: *Ford & Weston, Ltd., Osmaston-rd., Derby, £4,598.

Doncaster.—12 bungalows at Clay-la. estate: *Direct Labour, £10,889.

Durham.—Erection of mathematics and geography wing at Durham University: *J. Jackson & Son, Corporation-st., Newcastle.

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Durham.—Additional classrooms at the Hookergate Grammar School, for C.C. G. R Clayton (F.), County A., Court-la., Durham: *C.T.C. (Builders), Ltd., Blackhill, Co. Durham, £4,662.

Durham.—Five-bay extension to the works of Washington Chemical Co., Washington. Architects, L. J. Couves & Partners, Carliol House, Newcastle: *John Jackson & Co., Corporation-st., Newcastle.

Glasgow.—Alterations and additions at Pinkston Electricity Power Station: *Brown, Fraser & Co., Ltd., Glasgow, £18,113.

Great Yarmouth.—Erection of County Primary Infants' School, Magdalen College estate. H. F. Dyson, M.B.E., M.I.Mun.E., B.E. Quantities by Philip Pank, F.R.I.C.S., 15, The Lower Close, Norwich:—

R. H. Carter & Son, Ltd., Gt. Yarmouth	£54,936
E. Bush, Jnr., Winterton	52,312
R. G. Carter, Ltd., Norwich	51,265
F. R. Hipperson & Son, Ltd., E.C.2	51,191
J. Cooper, Gorleston	50,839
J. L. Weller, Bradwell	50,790
W. Ames, Ltd., Yarmouth	50,591
H. A. Holmes & Sons, Ltd., Gorleston	49,617
*E. Moore & Son, Ltd., Lichfield Works, Great Yarmouth	49,013

Ilkeston.—44 houses for T.C.: *Sherwin Building & Contracting Co., Ltd., Hickings-la., Nottingham, £49,536.

Lancs.—C.C. extensions to Crosby Junior and Infants' School: *Bristol Aeroplane Co. (Housing), Ltd.; branch library at Ramsbottom: *John Tinline, Ltd., Bury; erection of Huyton-with-Roby, Sylvester County School: *Gilbert Ash, Ltd., London, £63,000.

London (S.W.1).—Government offices on sites of 26-28, King-st., S.W.1, for Ministry of Works for which Gordon Jeeves, F.R.I.B.A., are architects: *Percy Bilton, Ltd.

¶London (Admiralty). — *Eaglescliffe, Co. Durham*, R.N. Depot, Internal painting of two blocks, Wm. Latimer & Co., Ltd., 10, Archbold-ter., Newcastle-upon-Tyne 2.

¶London (Air Ministry).—Contracts to value of £500 or over for week ended November 5:—*Building work*: Fred. Pearson & Co., Ltd., Doncaster. Erection of timber towers, William Harbrow, Ltd., London, S.E.16.

London (Air Ministry).—Contracts to value of £500 or over for week ended November 12. *Building work*: C. Jenner & Son, Ltd., Folkestone, Kent; W. Lawrence & Son, Ltd., Swaffham, Norfolk. *Painting work*: W. C. Simpson & Son, Ltd., Edinburgh, 12; J. and B. Abbott (Contractors), Ltd., Harrow, Middlesex.

¶London (M.O.W.).—Contracts placed by M.O.W. for week ended November 5:—

London: Temple Bar T.E., Russell-st., W.C.2. Internal painting and cleaning, C. & T. Painters, Ltd., Mordaunt-rd., Harlesden, N.W.10; Mount Pleasant S.O., Letters and Stores Block, Painting, C. & T. Painters, Ltd., Mordaunt-rd., Harlesden, N.W.10; P.O. Research Station, Dollis Hill, N.W.2, Internal painting, C. & T. Painters, Ltd., Mordaunt-rd., Harlesden, N.W.10; Terminus T.E., Gray's Inn-rd., W.C., Internal painting, Wm. Winstanley & Co., Ltd., Windsor House, 46, Victoria-st., S.W.1. *Hampshire*: O.S.O., Sendon-rd., Southampton, New negative store and boiler-house, Mullen & Lumsden, Ltd., 151, Rumsey-rd., Shirley, Southampton. *Herts*: Letchworth G.T.C., Pixmore-av., Internal painting, Theobalds, Bancroft, Hitchin. *Lancs*: Moss Side Hospital, Maghull, Extension to lavatory blocks, E. H. Bampton, Ltd., Blackmoss-la., Aughton Park, Ormskirk; Ministry of National Insurance, Major Cross-st., Widnes, Alterations and decorations, E. G. Gibbs, Ltd., 35-37, Church-st., Woolton, Liverpool.

¶London (War Dept.).—Works contracts placed by War Dept. for week ended November 5:—

Salop: Miscellaneous work, W. Kendrick & Sons, Ltd., Walsall. *Warwickshire*: Building work, Geo. Linnecor & Son, Ltd., Birmingham. *London*: Miscellaneous work, W. W. Dawes, Ltd., London, S.W.19.

Manchester.—100 houses at Woodhouse Park and Moss Nook, for T.C.: *W. J. Simms, Sons & Cooke, Ltd., Nottingham; adaptation works at St. Joseph-bldgs.: *G. W. Dawson & Co., Manchester; 24 shops, flats and garages at Newall Green main centre: *G. Wimpey & Co., Ltd.; 16 temporary classrooms at various schools: *Wm. Townson & Sons, Ltd., Bolton.

Middleton.—26 W.K.3 houses at Conway-cl., for B.C.: *Middleton Master Builders' Federation, £31,505.

Newcastle-on-Tyne.—Conversion of Cambridge Hall into offices for the Road Haulage Executive. Plans by L. J. Couves & Partners (FF.), Carliol House, Newcastle: *Stephen Easten, Ltd., Westgate Grange, Newcastle.

Newcastle-on-Tyne.—Residential hostel at Benton for students at King's College. Architects, Mauchlen & Weightman (FF.), Saville-row, Newcastle: *J. R. Rutherford & Sons, Ltd., Jesmond-rd., Newcastle.

Nottingham.—Reconstruction of five houses at Kentwood-rd.: *J. Powell & Son, Barnston-rd., Nottingham, £5,765.

Nuneaton.—74 houses at Caldwell estate: *Collman & Son, Coventry, £93,414.

Ormskirk.—28 houses at Scott Estate: *Berry & Hellowell, Ltd., Burscough (extension of contract).

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Ringwood and Fordingbridge.—One block of single-storey dwellings, for R.D.C. F. Andrews (L.), architect, 45, High-st., Ringwood: *H. Parker & Son, "Rookery Nook," Fairlie Estate, Ringwood; two pairs of S.W. aspect houses: *Dor Properties (Bournemouth), Ltd., Cheam House, Exeter-rd., Bournemouth.

St. Pancras.—24 flats for Prince of Wales-rd. housing scheme, for B.C.:—

Richard Costain, Ltd.	£64,035
Harry Neal, Ltd.	63,092
Wilson Lovatt & Sons, Ltd.	62,911
Y. J. Lovell & Son, Ltd.	61,949
Humphreys, Ltd.	61,533
*St. Pancras Building Dept....	59,681

(Subject to necessary loan sanctions.)

Sheffield.—Houses for T.C. at Manor Park estate. 106: *J. F. Finnigan & Co. (Sheffield), Ltd., £150,568; 84: *Reeves, Charlesworth, Ltd., £118,988; 44: *W. L. Simpson, Ltd., £57,944; 48: *Melling Bros., Ltd., £69,427; 44: *Seymour Bros., £58,306. Houses at Norton and Clifton estates. 12: *Melling Bros., Ltd., £15,217; 20: *Edmund Oxley (Contractors), Ltd., £26,752; kitchen and dining-room at Greystones Secondary School: *Ackroyd & Abbott, £4,722.

Stalybridge.—70 houses at Buckton Vale estate, for B.C.: *Greenwoods Building Industries, Ltd., Oldham, £78,963.

Stoke-on-Trent.—124 houses at Tunstall: *H. Hoskins, Furlong-rd., Tunstall.

Sunbury-on-Thames.—25 houses on Vicarage-rd. site, for Met. Water Board: *Styles (Contractors), Ltd., £46,514.

Sunderland.—Completing crematorium building at Bishopwearmouth Cemetery, for T.C.: *Applebys (Builders), Ltd., Trafalgar-st., Newcastle-on-Tyne, £10,883.

Swadlincote.—57 houses at Upper Midway, for U.D.C.: *Permanent Houses (Burton), Ltd.

Tarvin.—Four houses at Keysbrook Tattenhall, for R.D.C.: *J. Wright & Son, £4,588.

Wainford.—Six houses with site works, for St. James S.E. scheme, for R.D.C. J. Owen Bond & Son, St. Faith's House, Mountergate. Thomas Gill & Son, Norwich £8,736
Comben & Wakeling, Ltd., Halesworth... 8,506
‡Wm. C. Reade, of Aldeburgh, Ltd., High-st., Aldeburgh, Suffolk 8,075

Wednesfield.—45 houses, Coleman-av., for U.D.C.: *Asphalte & Public Works, Ltd., Congreve-st., Birmingham, £58,217.

Wincanton.—Contract No. 1 Site works at Balsam Fields estate; Contract 2, erection of 10 houses and 12 flats at same site, for R.D.C. R. Earnshaw, architect, Council Offices. Contract No. 1: *W. Paul, 14, Church-st., Wincanton, £9,161; Contract 2: *B. N. A. Shoemark, Middle-st., Montacute, £26,560.

Wolverhampton.—Dining-room at Bushbury schools, for E.C.: *M. A. Boswell (Contractors), Ltd., School-st., £5,875.

Worcester.—First instalment of Brukfields Primary School: *T. Broad, Ltd., Great Malvern (recommended).

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